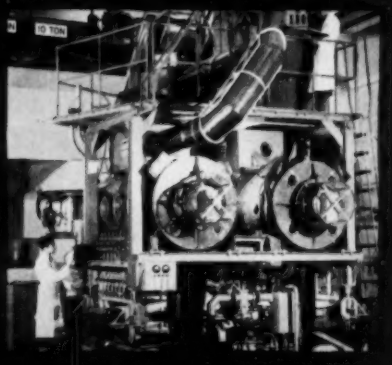
MARCH
1953

DIGEST



STEEL AND MONEY are making things boom along the Delaware River Valley. The ports will be bigger, and the ships will be heavier. p13

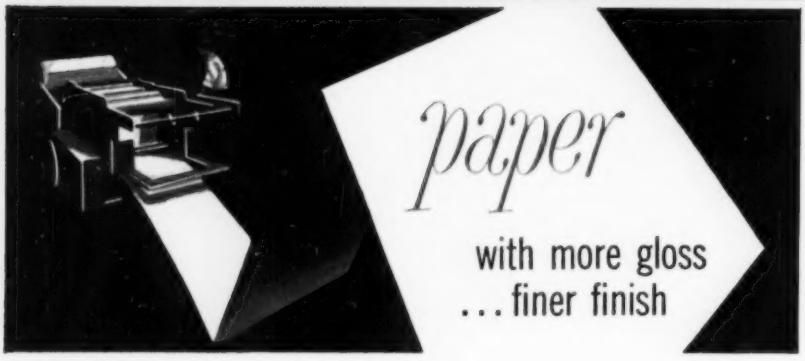
STALIN has created an industrial structure that may rival all Western Europe. But he has broken his own dictum. . p15

HARDBOARD from scrap—a brand new process turns plywood waste into strong, attractive sheets p22

NUCLEAR ENERGY around the world: Behind the headlines, a steadily growing program to put the atom to work for peace and prosperity. p24

TRANSISTORS make their first commercial bow in a new hearing aid with longer battery life. p27

INDUSTRIAL TELEVISION stakes its complex and expensive future on its ability to "help industry see where it cannot look". p34



with DOW *latexes*

There is a tremendous consumer demand for the new latex paints in home and industry. And no wonder—these new paints made with Dow latexes are easier to apply, free from the usual paint odor and extremely fast drying.

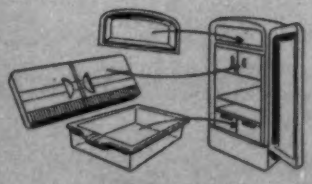
Your paints can enter this popular latex market, too, carrying the advantage of superior Dow latexes—always dependable in quality.

In the paper industry manufacturers have found that Dow latexes enable them to give their products a variety of finishes that assures the very finest surface for reproduction.

We invite your inquiries regarding Dow latexes and the potential in sales and product improvement it offers you. Write TODAY for complete information. Dept. EX3-51.

DOW produces more than 600 chemicals including industrial and agricultural chemicals . . fine chemicals for the pharmaceutical industry . . . chemicals basic to progress and industry.

LOOK TO DOW for high quality chemicals



PLASTICS

Styron (Dow polystyrene) is a thermoplastic material widely used to manufacture such items as lighting fixtures, radio cabinets and household refrigerator parts. Other valuable Dow plastics include Ethocel (Dow ethylcellulose), a tough plastic that combines lightness with good shock resistance; Saran for extruding and weaving into seat covers and screens; Saran film used for attractive packaging.

AGRICULTURAL CHEMICALS

To help farmers raise more and better crops and livestock, Dow manufactures such products as weed and grass killers, insecticides, fungicides, soil and grain fumigants, plant growth regulators and veterinary chemicals. Extensive research and expanding production by Dow are furthering agricultural progress all over the world.

DOW CHEMICAL INTERNATIONAL LIMITED
Midland, Michigan, U. S. A.; Zurich 2, Switzerland, Cable: Dowintal

DOW CHEMICAL INTER-AMERICAN LIMITED
Midland, Michigan, U. S. A.; Montevideo, Uruguay, Cable: Dowpanam

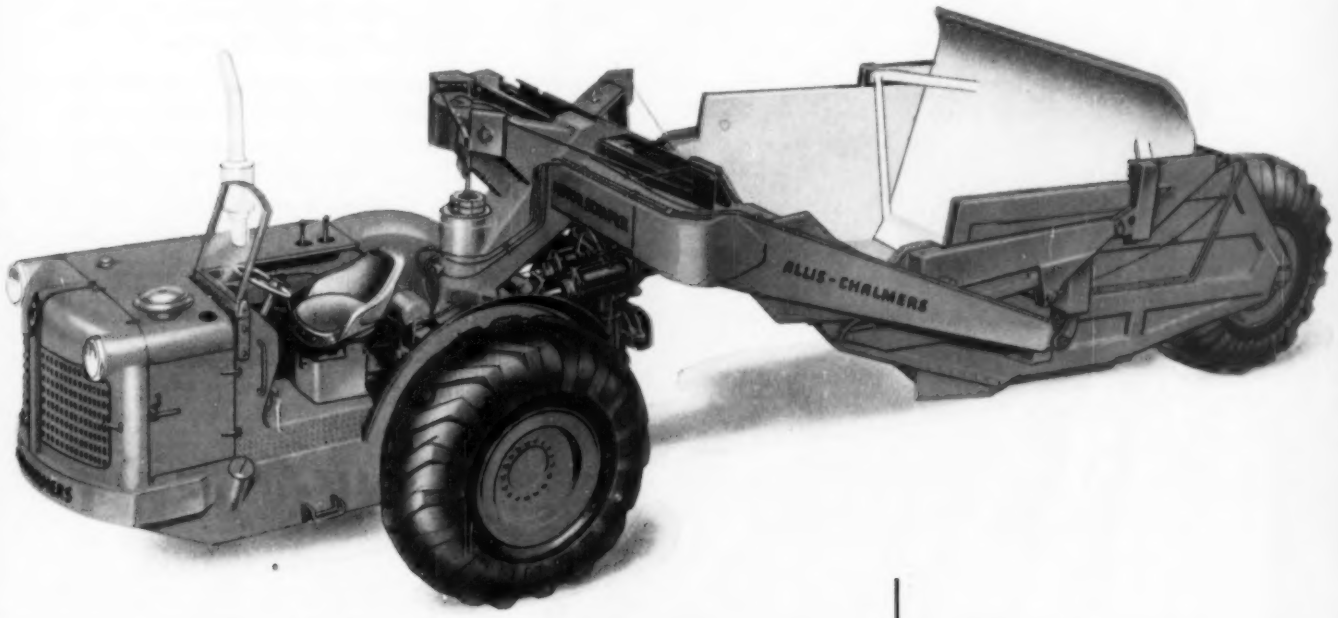
Earth Moving GIANTS

Moving dirt — vast quantities of it — speedily and at low cost, is a major problem in the construction of highways, dams and similar public projects so urgently needed everywhere today.

For years Allis-Chalmers has helped to meet this need with its heavy-duty, diesel-powered track-type tractors and other construction equipment.

Now Allis-Chalmers adds to this team a line of high-speed, self-propelled rubber-tired hauling units. These big-capacity Allis-Chalmers motor scrapers and motor wagons, weighing up to 47,900 pounds, will carry loads of as much as 18 cubic yards of dirt, weighing 20 tons and more. Mounted on pneumatic rubber tires larger in diameter than a man's height and powered with diesel engines, these giant machines travel at speeds up to 22.5 mph.

Designed for specialized use, these scrapers and dump wagons are reducing costs and speeding the completion of many projects which contribute to national progress and prosperity.



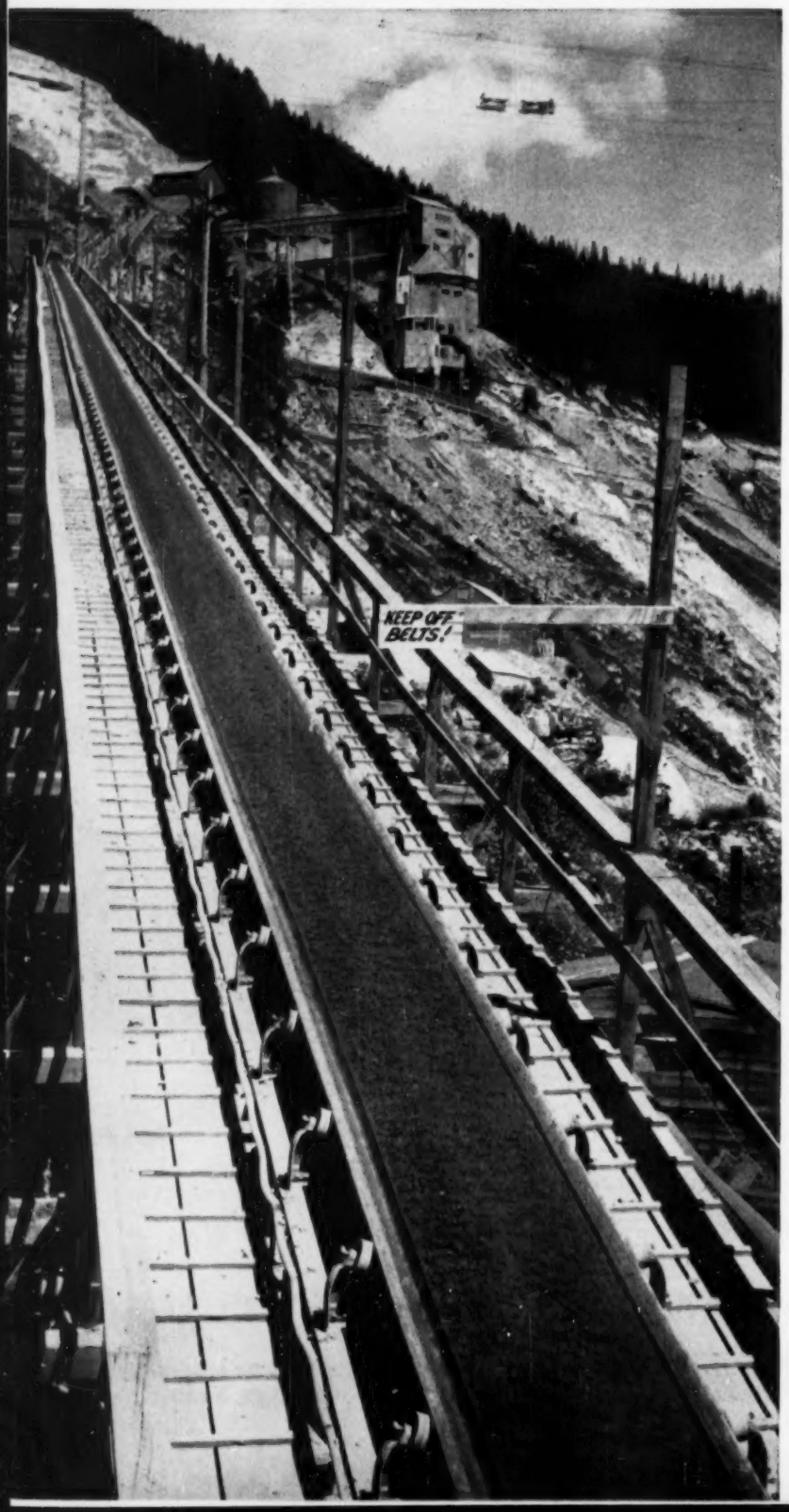
ALLIS-CHALMERS

DEPT. MH333 — TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

BUILDERS OF MACHINERY SINCE 1847

LINK-BELT research and engineering . . . . Working for Industry

High speed "highway" for low costs



Millions of tons of bulk materials now ride on belt conveyors engineered and built by LINK-BELT

For bulk materials handling, belt conveyors provide remarkable initial economies. And in many cases operation and maintenance cost far less than any other method of transportation.

Belt conveyors handle huge tonnages, because the material runs at high speed in a continuous stream—24 hours a day, if desired.

Initial cost is low, because there is no need to carve out hills or fill in low spots —no need for heavy bridges over obstructions. Belt conveyors are light in weight and operate in narrow or low passages . . . up or down steep grades. They are inherently long-lived, requiring little maintenance.

Link-Belt is a nation-wide organization with broad experience in the engineering, manufacture and installation of materials handling and power transmission machinery. Link-Belt is prepared to take care of every detail from planning through erection.

◀ *Link-Belt belt conveyor system at Hungry Horse Dam (Mont.) carries 900 tons per hour of blended sand and sized aggregates up a steep canyon wall to concrete mixing towers.*

12,748-C

LINK-BELT

LINK-BELT COMPANY
Engineers • Manufacturers • Exporters of Conveying and Power Transmission Machinery • Established 1875.

EXPORT DIVISION
2680 Woolworth Bldg., New York 7, U.S.A.
Cable Address: Linkbelt—New York.
Representatives listed on opposite page.

ONE SOURCE . . . ONE RESPONSIBILITY FOR MATERIALS HANDLING AND POWER TRANSMISSION MACHINERY

LINK-BELT

Representatives Throughout the World

Angola, Azores, Madeira Islands—Alfredo Aives & Co. (Filhos), Lisbon, Portugal
Argentina—General Electric S.A., Buenos Aires and Rosario
Australia—Link-Belt Company Pty. Ltd., Sydney • Malleable Castings Pty. Limited, Marrickville
Belgium, Luxemburg & Belgian Congo—Fabricom, S.A., Brussels
Brazil—Cia. Importadora de Maquinas "Comac", Rio de Janeiro, Sao Paulo and Belo Horizonte • Figueras S/A. Engenheiros & Importadores, Porto Alegre, Pelotas, Florianopolis and Cachoeira do Sul • Oscar Amorim, Comercio S/A., Recife and Natal
British Guiana—J. N. Harriman & Co., Ltd., Port-of-Spain, Trinidad, B.W.I.
Canada—Link-Belt Limited, Toronto, Montreal, Vancouver, Winnipeg, Swastika, Hamilton, Elmira, Halifax
Canal Zone—Agencias Lumina, S.A., Panama
China—Li Ya Industrial Development Corp. (H.K.) Ltd., Hong Kong
Chile—Gildemeister & Co., Ltda., Santiago, Coquimbo, Ovalle, Valparaiso, Concepcion, Victoria, Temuco, Valdivia, Rio Bueno, Osorno, Puerto Varas, Puerto Montt, Punta Arenas
Colombia—Representaciones Ospina Perez, Ltda., Medellin, Cali and Barranquilla • Ospincon Ltda., Bogota
Costa Rica—Grace & Co., C.A., San Jose
Cuba—Woodward, Gilbert & Cia., Havana
Denmark—Hakon Gertsen, Copenhagen K
Dominican Republic and Haiti—F. A. Ortiz & Co., Inc., San Juan 5, Puerto Rico
Ecuador—Ferrum, S.A., Guayaquil & Quito
El Salvador—Grace & Co., C.A., San Salvador
England—Wolveare Overseas, Ltd., Devonshire (Agricultural Chains only)
Finland—Industria Osakeyhtio, Helsingfors
France—C. Comiot, Paris
Greece—The Hellenic Technical Supply Co., Athens
Guadeloupe, F.W.I.—Pierre Langlois Corp., Pointe-A-Pitre
Guatemala—Grace & Co., C.A., Guatemala
Hawaii—Honolulu Iron Works Co., Honolulu; Hilo Iron Works, Hilo
Hong Kong—Li Ya Industrial Development Corp. (H.K.) Ltd., Hong Kong
Iceland—Velsmidjan Hedinn Ltd., Reykjavik
India—Kilburn & Co., Ltd., Calcutta, Bombay, New Delhi, Madras, Kanpur
Israel—Manfred Gottesmann, Tel Aviv
Italy—Trione Ricambi, S.p.A., Turin, Milan and Rome
Jamaica—Reginald Aitken Ltd., Kingston
Malaya—United Engineers, Ltd., Ipoh, Kuala Lumpur, Malacca, Seremban, Penang
Martinique—M. & E. Hayot, Fort-de-France
Mexico—The General Supply Co., S.A. Mexico, D.F. • Gustavo Rodriguez, Monterrey, N.L.
Netherlands—J. H. Kimman's Technische Handelmaatschappij, N. V., Rotterdam
New Zealand—Dominion Sales Corp., Ltd., Auckland, Wellington, Christchurch, Dunedin
Nicaragua—Grace & Co., C.A., Managua
Norway—Welhaven & Co., A/S., Oslo
Pakistan—Kilburn & Co. (Pakistan) Ltd., Karachi, Lahore and Chittagong
Panama—Agencias Lumina S.A., Panama
Paraguay—Sociedad Anonima Comercial Manuel Ferreira, Asuncion
Peru—Gross Equipment S.A., Lima and Arequipa
Philippine Islands—The Earnshaws Docks & Honolulu Iron Works, Manila, Bacolod and Cebu
Portugal—Alfredo Alves & Co. (Filhos), Lisbon and Oporto
Puerto Rico and Virgin Islands—F. A. Ortiz & Co., Inc., San Juan 5, Puerto Rico
Singapore—United Engineers Ltd., Singapore
Surinam—N. V. Ingenieursbureau H. N. Van Dijk, Paramaribo and New Nickerie
Sweden—Aktiebolaget Fr. Ramstrom, Harnosand and Stockholm
Switzerland—Wilhelm Pluess, Zurich 1
Taiwan—Li Ya Industrial Development Corp. (H.K.) Ltd.
Thailand (Siam)—International Engineering Co., Bangkok
Trinidad, British Guiana, Barbados, Antigua, St. Kitts, Grenada, St. Vincent, St. Lucia, Tobago—J. N. Harriman & Co., Ltd., Port-of-Spain, Trinidad, B.W.I.
Union of South Africa, Southwest Africa, Northern Rhodesia, Southern Rhodesia, and Mozambique—Link-Belt Africa Limited, Springs, Transvaal • Edward L. Bateman Ltd., Johannesburg, Durban and Bulawayo, S. R.
Uruguay—General Electric S.A., Montevideo
Venezuela—Ortiz & Mejia C.A., Caracas
Western Samoa, Fiji and Tonga—Fletchers (South Seas) Limited, Apia

McGRAW-HILL DIGEST

. . . the best from 52 business magazines—see p52

Volume 8 | March 1953 | Number 3

FEATURES

Delaware River Ports Are Growing Fast 13
Russia: Its Economy Trapped 15
New Hardboard Process 22
Progress in Atomic Energy 25
Transistors Now on the Market 27
Boost Fabric Quality 28
Why They Like Their Work 31
Television Goes To Work 34
Flying Eye Sees All, Tells All 39
Rolled Paper-Thin Metals 40

AVIATION, TRANSPORTATION
Sea Trials for Sea Dart 30
More Power Steering 33
Prevents Propeller Reversal 41

CHEMISTRY, METALLURGY
Ethylene-Oxide Process 30
Copper Coating 33
Detergent Sales Gain 41

CONSTRUCTION
Construction Methods and Trends 27
Raises Silo in 8 Days 30
Shows Asphalt Level 33

ELECTRICITY, POWER
Probe Tests Tubes 33
Aluminum for Windings 36
Better Lighting Maintenance 41

ELECTRONICS
Spaghetti for a Giant 19
Pressure Welds Aluminum 33
Latest Life Saver 36

FOOD PROCESSING
"C" Improves Grape Juice 23
Jumps Fudge-Line Output 30
Better Vanilla Flavor 36

METALWORKING
Rings Turned Upside Down 18
Saves Diamond Bort 19
CO_2 Cools Carbide Tools 27

MINING, PETROLEUM
Linings Cut Abrasion 19
Sells Packaged Coal 33
Rig Tracks Coal Seam 37

PLANT MANAGEMENT
Makes Presses Safer 19
Save $38,000 a Year 21
British Retailing Changes 22

TEXTILES
Saves Extra Dye Run 23
Cotton-Testing Program 41
Two New Looms 43

DEPARTMENTS

Business Trends 7
Washington Report 9
This Month's How To 21
Production Ideas 50
Technical Shorts 33
New Products 42
Management Report 49

Harry S. Wharen, *Editor* | **Joseph A. Cohn**, *Assistant Editor* | **Arthur R. Poutry**, *Assistant Editor* | **W. Howe Sadler**, *Publications Manager*
Walter H. Diamond, *Trends' Editor* | **J. K. Van Denburg, Jr.**, *Editor, World News* | **George B. Bryant, Jr.**, *Washington Bureau* | **Boyd France**, *Washington Bureau*

March 1953 McGRAW-HILL DIGEST Vol. 8—No. 3

Member — Audit Bureau of Circulations

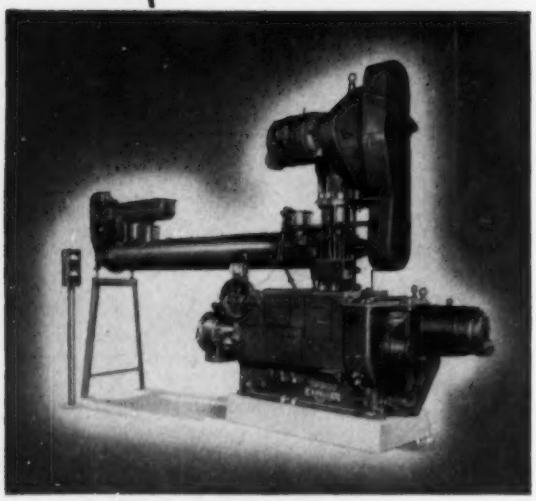
Published monthly by McGraw-Hill International Corporation for circulation in all countries of the world except the United States and Canada. *Publication office:* 99-129 North Broadway, Albany 1, N. Y., U. S. A. *Executive and editorial offices:* 330 West 42nd St., New York 36, N. Y., U. S. A. Curtis W. McGraw, Chairman of the Board; Willard T. Chevalier, President; Eugene P. Warner, Senior Vice-President; Joseph A. Gerardi, Treasurer; John C. Cooke, Secretary; J. C. Stark, Vice-President Publications Division; K. Presbrey Bliss, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Director of Circulation.

Subscriptions may be ordered through Director of Circulation, through local book dealer, or McGraw-Hill Publishing Co., Ltd., McGraw-Hill House, 95 Farringdon St., London, E. C. 4 (British only). Subscription rates: $5 for 1 year, $8 for 2 years, or $10 for 3 years; single copy 50¢ (U. S. currency). Entered as second-class matter January 1, 1953, at the post office at Albany, N. Y., under the Act of March 3, 1879.

Copyright, 1953 by McGraw-Hill International Corporation, 330 West 42nd Street, New York 36, New York. Reproduction of items in full or part without written permission prohibited in all parts of the world.

THE EXPELLER* PROCESS

FLAG FLIES ALL OVER THE WORLD



Super Duo Expeller with Conditioner Vessel

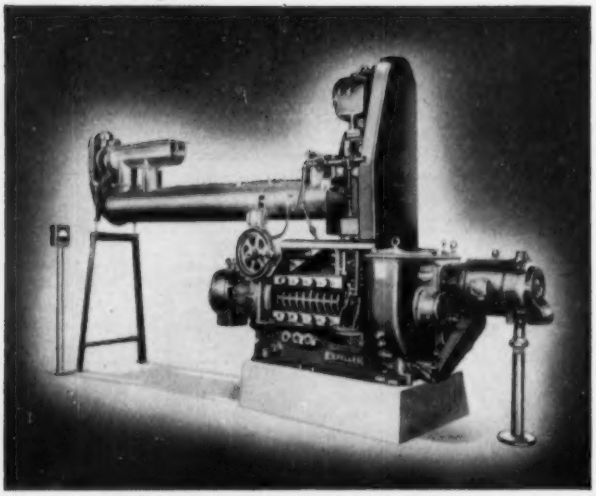
Wherever in the world you find processing of oleagineous seeds and nuts without exception you find the Anderson Expeller process. Why do so many oil millers in so many countries select this process? Simply because an Expeller plant produces the best oil and meal at a lower cost per ton handled. An Expeller plant permits the oil miller to make more profit because it requires less labor, less maintenance and is noted for its trouble-free ability to handle single or multiple materials economically. Every piece of equipment Anderson furnishes for an Expeller plant is correctly engineered to complement each other whether it's one of the Expeller models shown here or cookers, cleaners, separators or even motors and conveyors.

Whether you are buying a single piece of equipment or a complete Expeller plant, ask for assistance from the company that produces quality equipment and processes enabling you to produce more profits. Our representatives will be glad to work with you on your current oil milling problem. Write outlining your requirements.

THE V. D. ANDERSON COMPANY

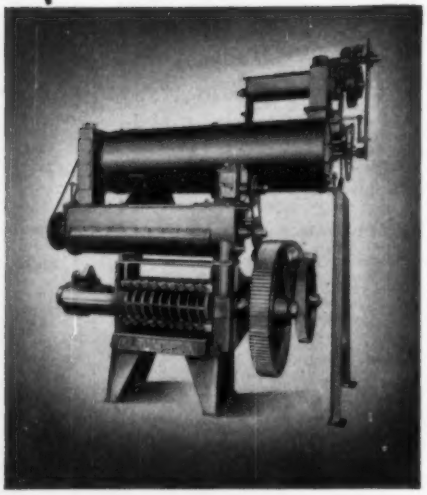
1945 West 96th St. Cleveland 2, Ohio, U.S.A.

EXPELLER PROCESS



Duo Expeller with Conditioner Vessel

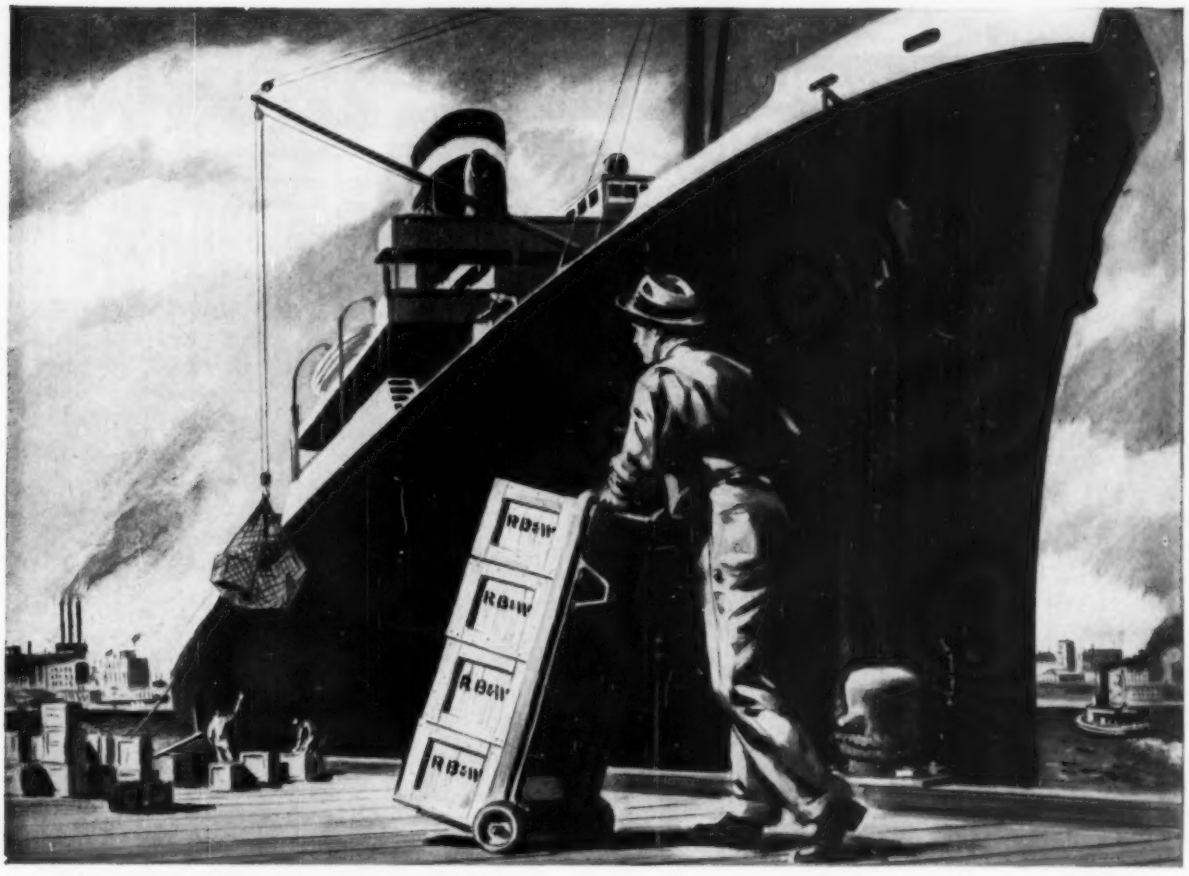
EXPELLER PROCESS



Red Lion Oil Expeller with 24" Cooker

WORLD'S LARGEST SUPPLIERS OF EXTRACTION EQUIPMENT

*Trade Mark Reg. in U. S. and in Foreign Countries



This shipment is important to world industry

World industry needs RB&W fasteners such as this shipment contains.

For the strength of any assembled product depends on the strength of its fasteners. And today, world markets need the most durable, long-lived products that can be built.

RB&W supplies the finest fasteners from its four plants speedily and easily accessible to any land by rail, sea and air.

It pays to specify RB&W bolts, screws, nuts and rivets, because they hold securely, are made of the proper material for the job, and are easily installed. They are uniformly accurate in threading, uniformly strong in physical properties . . . thanks to strict quality control over every phase of production, from raw material to end product.

Insist on "the complete quality line" for *all* your needs in BOLTS: Machine, Carriage, Lag, Plow, Step, Elevator, Tire, Stove . . . NUTS: Hot Pressed, Cold Punched, Semi-Finished, Castellated, Slotted, Machine Screw . . . SCREWS: Cap, Set, Machine, Tapping . . . SPECIALS: Cold Upset or Cold Formed Products . . . RIVETS.

GET IN TOUCH WITH THESE REPRESENTATIVES

EGYPT—
Shalon Brothers & Co., P.O. Box 716, Cairo

FAR EAST—
Muller & Phipps, 1 Park Ave., New York, New York

GREECE—
Nicholas John Coroneos, Stoa Rizari, Piraeus

IRELAND—
American Exports Co., 30 South King St., Dublin

NEWFOUNDLAND—
James G. Crawford, St. Johns

ISRAEL—
Efco Agency, P. O. Box 1181, Tel Aviv

SOUTH AFRICA—
Arthur E. Harris, P.O. Box 1199, Johannesburg

TURKEY—
Leon Bernardin Marco, Posta Kutusu 85, Istanbul

RB&W EMPIRE
For 108 years . . .
The Complete Quality Line

BOLTS EMPIRE NUTS-RIVETS

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY
Export Department • Port Chester, N.Y.
PLANTS AND OFFICES IN MAJOR INDUSTRIAL CITIES

THE CASE OF THE SAVILE ROW TAILOR

In their showroom, John G. Hardy Limited display over 1600 fine cloths for tailors and their private customers. Stock moves fast, accounting must keep up . . .

They cut the figures to fit the cloth!

JOHN G. HARDY LIMITED, the London woolen merchants, are helping the tailor serve the public. Once the private customer has made his choice from the swatches of Hardy Suitings at his tailor's, or at Hardy's own showroom (where upwards of 1600 cloths are displayed and stocked), purchase and delivery of the material is done at the wholesale level.

This novel merchandising method means obviously that sales records and agents' commission statements for a huge yardage of small lengths of cloth must be kept scrupulously up to date. Anxious to avoid a great deal of complicated paper work—and a consequent increase in office staff—Hardy's went for advice to machine accounting specialists of Burroughs Adding Machine Limited.

After a full investigation, Burroughs suggested that the firm could take care of all its accounting problems with the help of one Burroughs Typewriter Accounting Machine and a Desk Bookkeeping Machine.

Result: Hardy's office system is now as smoothly up to date as their showroom. Sales and commission statements go out on the dot to tailors and agents in 46 countries. Profit and loss figures (previously produced only twice a year) are available daily. In addition, the payroll for the firm's employees, which used to take the office a full day, is now produced in an *hour and a half*.

What about you? If your business could benefit from faster figuring, call in Burroughs. We can offer advice on all the latest systems, for Burroughs makes the world's broadest line of modern record-keeping machines: Adding, Calculating, Accounting, Billing and Statistical Machines, Cash Registers.

Call Burroughs *today*. Sales and Service offices in principal cities round the world. Burroughs Adding Machine Company, Detroit 32, Michigan, U.S.A.

Seen examining a Burroughs Typewriter Accounting Machine is Mr. P. A. B. NIVEN, chief accountant for the woolen merchants, John G Hardy Limited. Seated is Mr. K. L. JONES, the Burroughs man who helped solve the Case of the Savile Row Tailor.

FOR EXPERT ADVICE IN ANY FIELD OF BUSINESS FIGURES . . .

CALL THE Burroughs MAN

BUSINESS TRENDS

AMERICAN IMPORTERS are continuing to buy from abroad at a fast pace. Seldom in postwar era have foreign exporters received such an onrush of orders as in the first quarter. Record Christmas retail sales left U. S. inventories low.

Dearth of goods caused by December's heavy selling delayed many promotions in the early months of this year. Retail buyers were forced to scour the domestic markets to replace imported merchandise temporarily. Abrupt rise in outstanding import letters of credit now assure U. S. a new peak of $11.5-billion of purchases from abroad in 1953.

Woolens and worsteds outlook for exporters overseas is far more promising than last year. Inventories remain near the danger point for several fabrics. Margin profits of domestic manufacturers have narrowed considerably as a result of the squeeze from imports.

Apparel gift items continue in demand. Business for the first 6 months has swung upward. A scramble is predicted in the spring for some of the lower priced gifts. Linen imports, especially tableware items, are encountering resistance because of plastic substitutes and high prices. Aggregate overseas buying of linens will not exceed that of 1952—a poor year.

Demand for leather goods from abroad is above average, particularly from England. Below normal stocks in the past few months caused a rise in orders.

Fur imports have increased because of a 10% jump in last year's Christmas sales. Mink and Persian exporters will enjoy good sales to the U. S. There will be fewer martens from Europe. Perfume inventories touched a 4-year low. Less finished perfumes will be imported.

Toy importers are buying less from abroad because of domestic competition. Only moderate ordering can be expected during the remainder of the year. New orders did not start coming in until after the Nuremberg Fair, which many U. S. representatives attended.

Sales of watches improved in the first quarter. Imports should hover above 1952 levels. With inventories now reduced, Swiss manufacturers may look for accelerated buying from the U. S. for some time. The new administration is unlikely to change the present schedule of tariffs.

Gem markets, especially those for diamonds, appear to be expanding once again. Foreign purchases gained momentum in the first quarter and will far exceed 1952 imports. Oriental pearls, however, have outpriced themselves. Low quality Japanese pearls have discouraged importers.

Chinaware dealers are replenishing inventories, but the market remains selective. Decorative pieces from Italy continue to be popular. Japanese sales are declining, while only a devaluation of the franc can restore demand for French china.

Importers of spirits face tight competition. Only sales of Scotch whiskies, Canadian whiskies, and Puerto Rican rum are up and imports firm. Major U. S. distillers—who are also the principal importers—continue to encounter heavy pressure from high taxes, rising operating costs, and increasing consumer preference for cheap brands.

U. S. TOURISTS will spend over $1-billion in 1953 for the first time in history. This is 20% above last year's all-time peak. By far the greatest number of dollars will go to our closest Western Hemisphere neighbors. Canada anticipates 2-million American visitors and nearly a million will cross into Mexico.

Trans-Oceanic traffic also will set a new mark. Last year 400,000 travelers went to Europe; 380,000 to the West Indies and Central America; 42,000 to South America; and over 12,000 fanned out around Africa, Asia, and other compass points. All these records are destined to be surpassed in 1953.

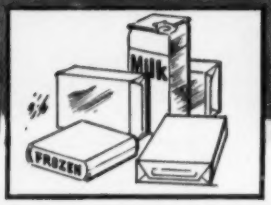
Western Europe will be the main attraction. Queen Elizabeth's coronation will draw approximately 100,000 foreign visitors—nearly half of them Americans. London hotels stopped taking reservations months ago.

Spain will be a leading tourist discovery. Many new hotels have been built. However, low prices for both food and lodgings are the chief reasons. France also has undertaken a concerted program of tourist construction. Americans will take advantage of the new regional hotels if the trend in auto touring continues.

Touring by car will ease the load on such favorite cities as London, Paris, and Rome. Nearly 4,000 foreign cars will be sold in the U. S. for delivery in Western Europe this year. Another 6,000 automobiles will be shipped to Europe for American owners. International driving licenses will be issued to 21,000 U. S. travelers, many to people who will rent cars while overseas.

Cyanamid

... source of basic chemicals for industry



Paper...

Cyanamid paper chemicals and specialties extend paper's usefulness... improve its qualities

The quality of paper depends to a large extent upon the materials that are used in its manufacture. Cyanamid produces a wide range of paper chemicals, dyes and pigments for use in papermaking processes.

SIZING MATERIALS

Rosin Sizes, liquid and dry, including **ACCOBRITE®** Rosin Sizes for imparting high brightness value; **CYFOR®** Fortified Rosin Sizes, and **CYRON*** Size for imparting resistance to aqueous liquids; **AEROSIZE®** Sizing Emulsions; **ALWAX*** and **WAXINE®** Wax Sizes.

RESINS

PAREZ® Synthetic Resins for application to paper as surface treatments or beater additions for wet-strength and other effects.

SPECIALTY CHEMICALS

ACCOCEL® Pitch Dispersants; **AEROSOL®** Wetting Agents; **AZITE®** 900 Liquefier; **CYNOL*** Rewetting and Softening Agents; Defoamers.

HEAVY CHEMICALS

CALMICRO® Calcium Carbonate; Aluminum Sulfate; Sodium Phospho Aluminate; Clays; Acids; Alkalis; other heavy chemicals.

DYES

CALCOMINE* Direct Dyes; **CALCOZINE*** Basic Dyes; **CALCOCID*** Acid Dyes; **CALCOLOID*** Vat Dyes; **CALCOGENE*** Sulfur Dyes; **CALCO®** Nigrosine and Oil Soluble Dyes.

PIGMENTS

CALCO® Coating and Glazing Pigments; **CALCO®** Ultramarine Pigments.

*Trade-mark

AMERICAN Cyanamid COMPANY

30 Rockefeller Plaza, New York 20, N. Y.

Representatives Throughout the World

Products are not offered in countries where adversely-controlled patent rights exist.

WASHINGTON REPORT

FOREIGN-POLICY THEME of President Eisenhower is now clear—get firm with your friends and tough with your enemies. Stalin has been warned that the U. S. will challenge his title to the European satellites and Red China. Western Europe has been told to unite and defend itself if it wants U. S. military and economic support.

Both threats are still distant. Psychological warfare threat to Mao is more psychological than military right now. And European know the U. S. will not withdraw from Europe as long as there is any hope of making it defensible and self-supporting.

But both threats are still real. Chiang Kai-shek with U. S. support eventually could exert real political suction on the foundations of the Red Chinese regime, particularly as it becomes more oppressive. Meanwhile, Chiang can harry the China coast and Hainan, perhaps even bomb Chinese bases. That will force Mao to deploy substantial defensive forces.

The danger is that the Red Chinese may counter with an attack on Formosa. Stalin might figure he could get the U. S. bogged down in a major war with China that way. But he would be risking starting World War III, so there is an even chance Moscow and Peiping will call off the Korean War at some point in order to neutralize Chiang again. That is what the administration is betting on. It also will put on more military pressure in Korea and Indochina to persuade Stalin to back down.

Increased U. S. pressure on Western Europe to unite and rearm will make it politically more difficult for Western European leaders to sell European unity and rearmament to their countrymen. All the forces of nationalism and anti-Americanism will rally against these policies now that they have become publicly identified as predominantly U. S. policies.

The implied threat of eventual U. S. withdrawal from the continent will cut both ways too. Germans will be scared to rearm, Frenchmen scared to let them if they think there is a real danger U. S. troops will not be around to hold the Russians off and to keep the peace.

The fact is that U. S. power over Western Europe has diminished in the last couple of years. Aid is increasingly less important. And many foreign officials now believe that the immediate Russian threat is less.

So Washington is readying an economic carrot to tempt Western Europeans where the diplomatic stick will not drive them. The main outlines of a new economic foreign policy are clear.

Customs simplification will be pushed through Congress. This will boost imports a couple of hundred million dollars a year, give a psychological boost to trade.

Reciprocal trade will be extended. High-tariff congressmen who were planning to raise the tariff barriers have been brought into line by Eisenhower. They will vote for the trade agreements act just about as it is. But do not expect any big new tariff concessions.

Private investment abroad will get a strong push. Moves like these are being considered:

- Preferential tax treatment for income on foreign investments.
- A new government guarantee program that would cover investors against all extraordinary risks.
- A big increase in Export-Import Bank's lending authority, plus authorization to make equity loans abroad.

Military offshore procurement will be boosted to a couple of billion dollars a year. The administration is also considering extending the principle of government buying of competitive foreign goods to the civilian field. That would require repealing the "Buy American" laws.

U. S. government procurement of foreign raw materials and development of new foreign sources of raw materials will be stepped up. Techniques will change little. The U. S. will lend money for development, will make long-term contracts at guaranteed prices to assure markets for the new output. Biggest emphasis will be in the field of nonferrous metals.

Foreign aid will not be replaced completely by trade by the new administration. Military aid will go on indefinitely—will be stepped up to Indochina, Malaya, and Formosa. Limited economic aid will be continued on a stop-gap basis.

But the big difference between Eisenhower's and Truman's foreign economic policy is this: Economic assistance from now on will be conditional upon getting results from U. S. allies.

Washington will not insist on miracles. But it will insist on visible progress toward free-world unity and strength. Nobody in the new administration has figured out yet what to do if U. S. allies do not respond. Because everybody figures they will.

McGraw-Hill Books
for
BUSINESS and INDUSTRY

Start a business library today. These books can help you cut maintenance costs, increase operating efficiency and improve production.

1. American Viscose Corporation—RAYON TECHNOLOGY (INCLUDING ACETATE), 2/Ed., 345 pages, 1953..... $7.65
2. Juran—QUALITY CONTROL HANDBOOK, 768 pages, 1951..... $10.75
3. Colean and Newcomb—STABILIZING CONSTRUCTION: THE RECORD AND POTENTIAL, 340 pages, 1952..... $6.65
4. Croft — AMERICAN ELECTRICIANS' HANDBOOK, 7/Ed., 1790 pages, 1953.. $10.75
5. Uren—PETROLEUM PRODUCTION ENGINEERING: OIL FIELD EXPLOITATION, 3/Ed., 807 pages, 1953..... $10.75
6. Wilson—OPEN THE MIND AND CLOSE THE SALE, 256 pages, 1953..... $4.35
7. Carroll—HOW TO CONTROL PRODUCTION COSTS, 272 pages, 1953..... $5.55
8. Wilson—MERCHANDISING PRIMER, 205 pages, 1953 ..... $4.50
9. Smail—MATHEMATICS OF FINANCE, 282 pages, 1953..... $5.05
10. Pease and Cherrington—MORTGAGE BANKING, 443 pages, 1953..... $8.15
11. Van Metre—INDUSTRIAL TRAFFIC MANAGEMENT, 552 pages, 1953..... $7.15
12. Kephart — THE EMPLOYMENT INTERVIEW IN INDUSTRY, 277 pages, 1952... $5.05
13. Snyder—ESSENTIAL BUSINESS MATHEMATICS, 2/Ed., 421 pages, 1952..... $5.05
14. Wilson—AN INTRODUCTION TO SCIENTIFIC RESEARCH, 365 pages, 1952..... $5.65
15. Anderson and Bancroft—STATISTICAL THEORY IN RESEARCH, 387 pages, 1952. $7.65
16. Davis—HANDBOOK OF APPLIED HYDRAULICS, 1248 pages, 1952..... $15.75
17. Grant—STATISTICAL QUALITY CONTROL, 2/Ed., 557 pages, 1952..... $7.15
18. Nelson—WRITING THE TECHNICAL REPORT, 3/Ed., 350 pages, 1952..... $5.05

These books may be ordered by using the coupon below, accompanied by full remittance in U. S. dollars. We will be glad to send you additional information on these and other McGraw-Hill books upon request.

clip here ----------

Book Department
McGRAW-HILL DIGEST
330 West 42nd Street
New York 36, N. Y., U. S. A.

Please send me the books corresponding to the numbers circled opposite, via registered book post. I understand that the prices quoted include postage and registration.

I am enclosing U. S. $.....

1. 2. 3. 4. 5. 6. 7. 8. 9.
10. 11. 12. 13. 14. 15. 16. 17. 18.

Name .....

Address .....

City .....

Country .....

To insure proper handling please type or print.

D-3-53

BUILT as only IH can build them
PROVED as only IH can prove them
VALUE only IH can give you

INTERNATIONAL gives you features you want in these NEW TRUCKS

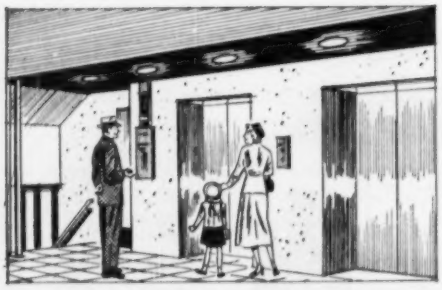
There are 307 new features to assure you top performance in the new International Trucks. And they're features you can absolutely depend on because they've been *proved* in the world's most advanced truck Engineering Laboratory! *Proved again* on International's 4000-acre desert Proving Ground!

See your International Distributor today. He can show you an unmatched combination of values – an International truck for any job, unequalled performance, lowest maintenance and operating costs, maximum driver comfort. International Harvester Export Company, 180 N. Michigan Avenue, Chicago 1, U.S.A.

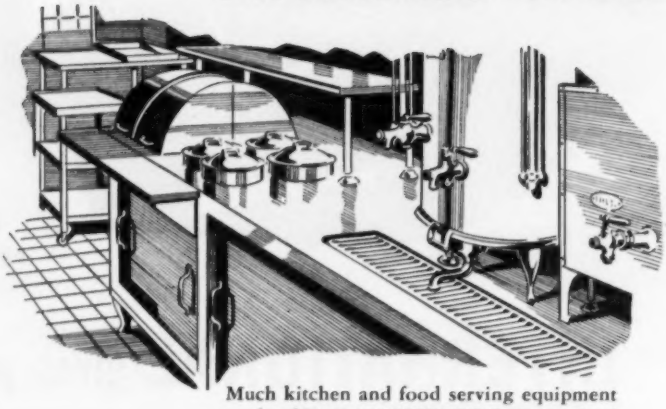
Make your next truck an INTERNATIONAL with – Exactly the right power – Diesel engines optional in models rated 14,000 pounds gross vehicle weight and over . . . transmissions to meet any requirement . . . 296 wheelbases, from 102 inches up . . . sizes from 4,200 to 70,000 lbs. GVW rating.

INTERNATIONAL TRUCKS IH

REPUBLIC *Enduro*® TYPE 430 STAINLESS STEEL



Type 430 ENDURO has stood up well in architectural applications such as elevator doors, stair rails, decorative panels, other uses.



Much kitchen and food serving equipment made of Type 430 ENDURO Stainless Steel 25 years ago still is in good condition.

Large tonnages of Type 430 ENDURO have been used for kitchen utensils of all types—commercial and domestic.

Republic ENDURO Type 430 Stainless Steel has been in continuous and successful use for more than 25 years in a broad variety of applications. In fact, the first stainless steels commercially produced were of this type.

Now Republic—world leader in the production of alloy, stainless and heat-resisting steels—has developed further refinements and modifications of Type 430 ENDURO. From the standpoint of fabrication and corrosion-resistance, it is very suitable for many varied applications in which stainless steel qualities are desired.

Its corrosion-resistance is exceptionally good. It offers high resistance to scaling and oxidation at elevated temperatures. It can be welded by most usual methods. It can readily be buffed and polished. It is easy to clean and to keep clean.

Today, Type 430 ENDURO, or some modification thereof, can be *your* most practical solution to problems created by necessary restrictions on nickel.

KNOWN THE WORLD OVER FOR QUALITY STEELS

Republic Steel Corporation

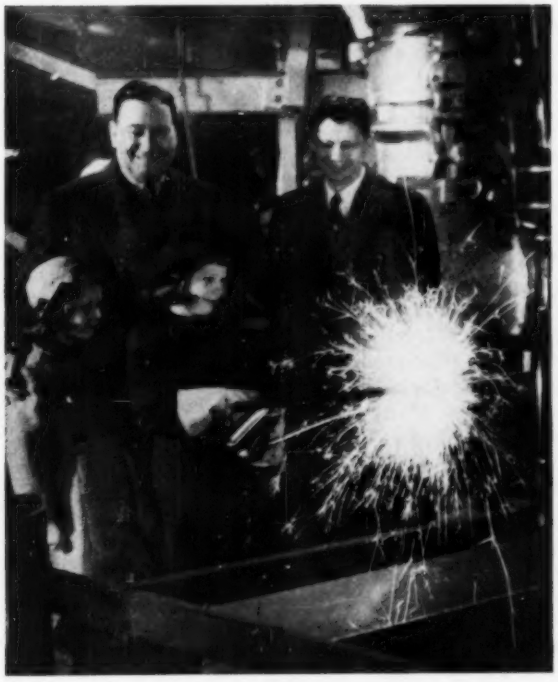
Export Department
Chrysler Building • New York 17, N. Y., U. S. A.
Cable Address: "TONCAN" • General Offices: Cleveland 1, Ohio

REPUBLIC STEEL PRODUCTS include: Alloy, Carbon and Enduro® Stainless Steels; Rust-resisting Toncan® Iron; Cold Finished Steels; Bars, Shapes, Sheets, Strip, Steel Roofing and Siding, Electrical Steels, Electro-Plated Sheets; Merchant Pipe, Line Pipe, Casing and Tubing for the gas and oil industry; Boiler and Heat Exchanger Tubes, Mechanical Tubing, Conduit; Tin Plate, Terne Plate; Bolts, Nuts, and Rivets; Wire Rods, Wire, Nails and Staples, Fence and Fence Posts; Drainage Products; Steel Building Products; Fabricated Steel Products—Shelving, Steel Cabinets for Kitchens, Storage Bins, Office Furniture, Lockers, Steel Containers. ®Reg. U. S. Pat. Off.

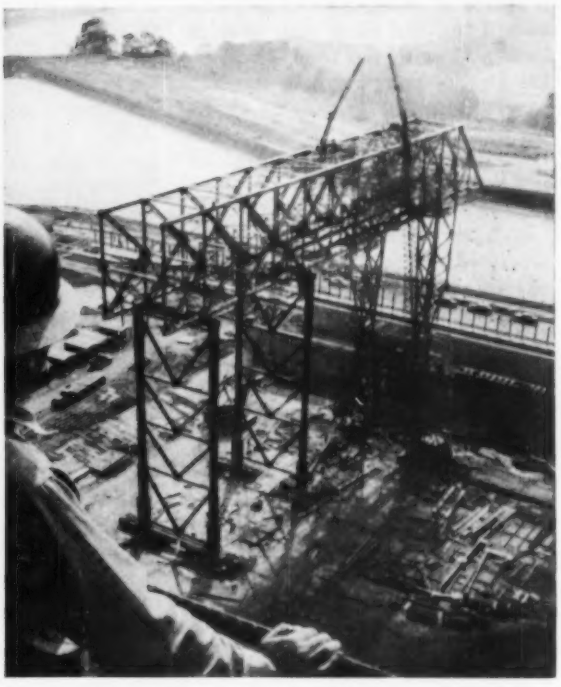
REPRESENTATIVES IN PRINCIPAL CITIES OF THE WORLD

MARCH 1953
VOLUME 8 • NUMBER 3

McGRAW-HILL
DIGEST



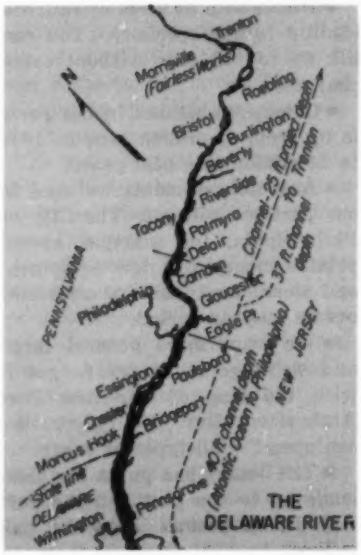
BENJAMIN FAIRLESS, chairman of U. S. Steel, beams as grandaughter ignites blast furnace at Fairless plant. Left of Fairless is A. J. Berdis, works superintendent.



ORE PIER costing $5-million stands in southeast corner of 3,939-acre site just below Trenton. Ore from U. S. Steel's Venezuela diggings will soon be coming in.

Delaware River Valley:

All Its Ports Are Growing Fast



THE DELAWARE River Valley, running from Trenton, N. J. down to the Atlantic Ocean, is on a $5-billion building spree. Sparking the boom is U. S. Steel Corp.'s invasion of the prosperous valley last year. So-called Big Steel, number one producer of steel in the U. S., just completed its new $400-million Fairless plant at Morrisville, Pennsylvania, 22 miles above central Philadelphia. Early spring should see the new mill turning out some finished steel, but far below its 1,800,000-ton capacity.

Another $5-million of U. S. Steel's money went into building a new ore pier on the west bank of the nearby Delaware River, giving the company direct access to the outside world. Biggest tonnage at the pier for some time will be in the form of raw ore coming in from Venezuela where U. S. Steel is setting up its own mining operation.

• **The Reason Why**—Big Steel's move into the Valley is a step to put itself on better footing with its biggest competitor—Bethlehem Steel Co. Bethlehem has a plant at Sparrows Point just outside Baltimore and another at Steelton with combined potential capacity of over 7-million tons.

Big Steel's expansion looms large over the rest of the Valley's tenants like Budd Co., Gulf Oil, Texas Oil, Radio Corp. of America, Ford, Chrysler, but their plans for expansion are only modest by comparison. As many as a full dozen of the nation's industrial bluebloods in the valley plan to build and restyle

more than a billion dollars worth.

The fast growth of the Valley is a source of discomfort to city officials along the river who have to keep pace with the boom—but it's the kind of pain they can stand.

• **Fanning the Fire**—One of the biggest problems with any boom is how to keep it going. The blessing has come to the Valley for two reasons:

1. Within a 300-mile radius lives one-third of the U. S. population, one of the richest markets in the world.

2. Transportation facilities are ideal: 380 truck lines, 3 major railroads, and a port with great potentialities.

The market is not likely to move, the rail and truck lines are well established. And far-sighted New Jersey and Pennsylvania businessmen, guiding the newly-formed bi-state Delaware River Port Authority, are going all out to keep up with the rocketing needs of industry.

Good ports along the broad Delaware River at Camden, Trenton, Gloucester, Paulsboro, N. J., Chester, Philadelphia, Pa., and Wilmington, Del., tie the valley to all world ports. Insurance executive Edward McAuliffe, new Authority Chairman, has one of the biggest ports in the world in his hands; if he handles it carefully, the Delaware River may soon be giving its big brother New York fast and hard competition.

• **Well Laid Plans**—The Authority has ambitious plans to widen and deepen the channel all the way from Delaware Bay to Trenton. Since Philadelphia is a Federal Port of Entry and has paid $1.5-billion in custom duties to Washington in the past 50 years, everyone expects the $94-million appropriation ready for the U. S. Congress to slip through with no trouble. In 2 years the deepest draft vessel should be able to churn easily up the 135 miles of fresh water from the Atlantic to Trenton.

• **Bridges to Burn**—Along with dredging and cleaning up must come the reconstruction of two draw spans across the river—the four-lane Tacony-Palmyra highway bridge and the Delair railroad bridge—into two high-level spans.

• **Big Port, Clear Sailing**—Already one of the biggest petroleum refining centers in the U. S., ports along the river are equipped for handling any volume of oil. Ore and other bulk or loose commodities get fast handling by some of the latest developments in the industry. Pennsylvania Railroad this summer will put the finishing touches on an $8-million ore pier at Greenwich Point in lower Philadelphia to help satisfy the Valley's huge appetite.

• **Facts & Figures**—Soft-spoken Thomas Brown, director, Philadelphia Bureau of Port Operations, sums up the port's character with records and a few thoughts on the future:

• The national average turn around-time for a ship is 7 days. We do it in 4 days.

• The labor situation is excellent. We have a unique setup. A priest, Rev. Denis J. Comey, a Jesuit teacher with the title Official Arbitrator, gets management and labor together whenever there is friction at the docks and they work out their problems in a good atmosphere. We're proud of our labor record.

• Crime tie-ups do not exist. The Philadelphia Dept. of Commerce hired a labor-relations man recently to come in and look us over and he gave us a clean bill of health.

• We also like to talk about the fact that lighterage is entirely unnecessary in our ports.

• Direct ship to truck or railroad loading is our specialty. You can lift up to 100 tons without extra charges.

• Commerce handled by our ports is up from 45-million tons in 1941 to 74-million this past year.

• Any improvements we need in our port we will get. The City of Philadelphia, for example, appropriates money for new equipment and piers. And such are amortized over a 40-year period.

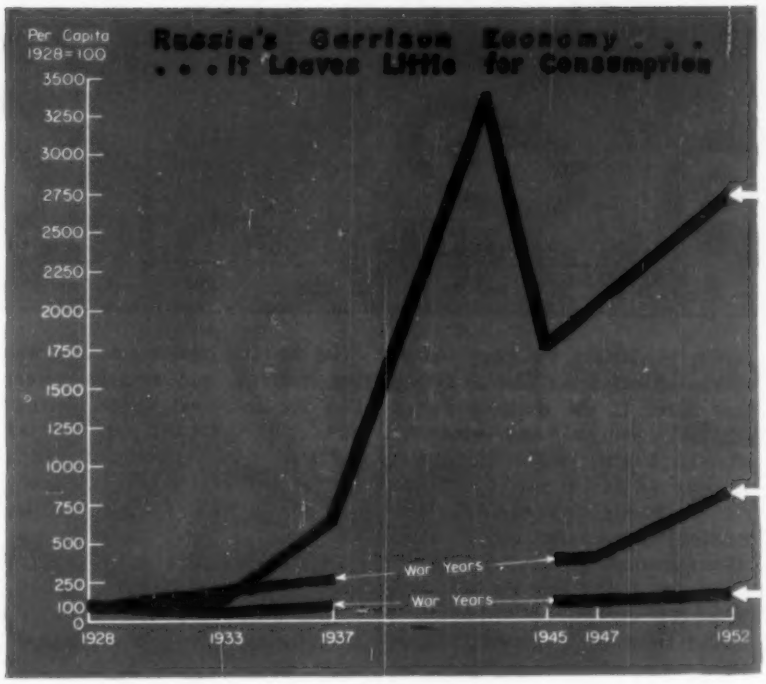
• We want more general cargo and we're going to try to get it with the help of our new Port Authority. Our 267 piers are equipped for all types of cargo.

• The Valley has put a big challenge up to the port and the port will do its best to keep the ball rolling.

Editor's Note:

This article is the first in a series on U. S. port development being prepared by the Digest staff especially for you to: 1) give you a clear picture of rapidly expanding U. S. ports—what is making them grow, and how U. S. port authorities are keeping up with this growth, 2) give you ideas that may lead to improvement of your own ports and, consequently, a better climate for international trade.

DELAWARE RIVER splits two states. Left is Philadelphia, Pennsylvania, right is Camden, New Jersey. A bi-state Port Authority helps them work together.



Russia: Its Economy Trapped

THE RUSSIA OF 1917 was a backward country economically. The industrial revolution had barely touched it. Except in the western part, Russia's vast resources had scarcely been tapped.

Today, 35 years later, Communist Russia has an economic and military potential second only to that of the United States. But in most respects the Soviet Union is an unknown country except to certain Western experts.

The main features of the society built in Russia by the Communists can be put clearly and simply into focus this way:

Government: A totalitarian dictatorship, headed by Stalin and a few henchmen, which rules ruthlessly through a tight party machine, a harsh secret police, and a vast state bureaucracy.

Economy: An unbalanced state monopoly, dominated by heavy industry, most of it geared to the Soviet war machine. Basic industries like steel have grown under forced draft since 1928 at the expense of agriculture and of consumer-goods output.

Society: A pyramided social structure that reflects the political and economic setup. The bulk of the Russian people are not really consumers; they live on whatever ration the state allows them, while the members of the state apparatus get a relatively good living.

War industry: The chart on this page shows the social cost of rising expenditure on the Soviet military machine.

• **Contradictions**—This totalitarian society is full of unbelievable paradoxes.

On one side, Communist Russia has the technical know-how to produce atom bombs and to build fighter planes that rank with the best in the world. Also, it has the industrial capacity to produce, among other things, 38.6-million net tons of steel a year, nearly as much as produced by all of western Europe.

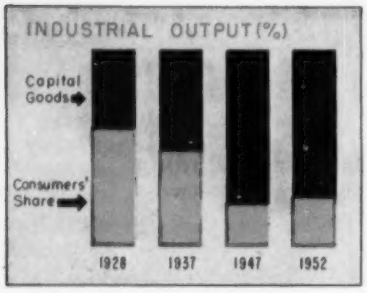
On the other side, living conditions in Russia are incredible, by Western standards. An Italian journalist, V. J. Rossi, who traveled extensively through the Soviet Union in 1951, summarized his observations this way:

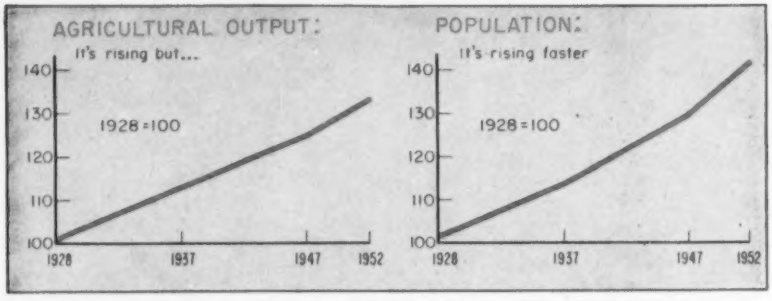
"The impression of things as they are is an impression of misery. On my whole long journey . . . I did not see at the railroad station a single person, man, woman, or child, dressed at all comparably to worker or peasant making a trip in the West. Their clothing, their faces, the things they carried—everything spoke of wretchedness."

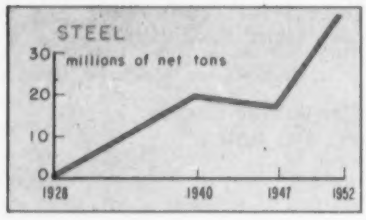
Add these things up, and you can see why the rulers of Communist Russia are driven to expand their power at home and abroad, forced to talk up a foreign enemy whether one exists or not, and prevented, perhaps perpetually, from making any fundamental social or economic changes lest thereby they undermine the foundations of their power.

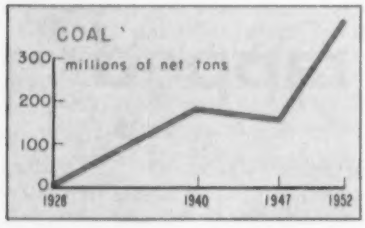
After Stalin fell heir to Lenin's mantle in 1924, the Bolshevik dictatorship soon became the totali-

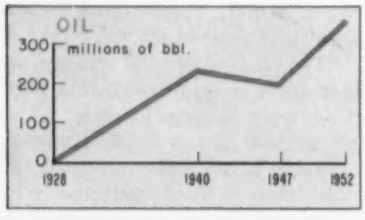
Russia's Industrial Might Climbs Faster than Agricultural Output . . .

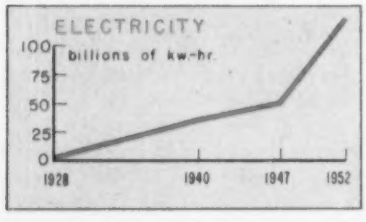


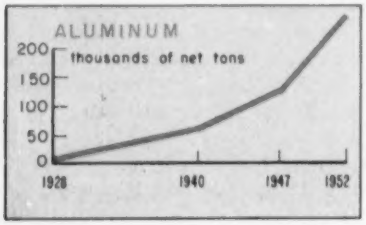












tarian superstate we have today. Stalin operated on the principle that force is the decisive factor in both political and economic affairs. Under Stalin, then, the security of Soviet power came to rest on the highly disciplined Communist Party, a constantly growing state bureaucracy, a ruthless secret police, and a complete state monopoly of the economic activities.

And from the beginning Stalin relied, as he still does, on the threat of capitalist encirclement to justify his "organs of suppression". The cold war is a domestic necessity as much as it is an instrument of Soviet foreign policy.

• **Bureaucratic Octopus**—You have a situation like this in Russia today: from Stalin down through the bureaucracy, those who hold power are committed to perpetuate the concept of Russia as a country that is constantly threatened by the capitalistic enemy. And the millions of people who form this structure must at all costs defend this theory of Russia's position. Without it, they would be superfluous. There is no doubt that this bureaucratic octopus will continue to grow. Stalin said so just before the Communist Congress last last October.

The second basic element in the Soviet scheme of things is the concentration on heavy industry. You can get some measure of how unbalanced the Russian economy is from the charts on top of page 15.

You can see the same thing in the way the Soviet government allocates investment between the various sectors of the economy. A secret Russian plan, captured early in World War II by the German army, gives a breakdown for industrial investment in 1941.

Of the total investment, 26% was for coal, oil, and electric power; 17% for iron, steel, and nonferrous metals; 9.5% for the metalworking industries; 4% for chemicals; 25% for aircraft and other arms; and only about 4.5% for all light industries.

Western experts on Russia figure the 1952 breakdown roughly matches that of 1941, except that an important piece of investment must now be allocated to atomic development projects.

Industrial investment in Communist Russia has been a planned political and military operation. Industry was superimposed on an agricultural economy, not to satisfy the needs of the Russian people but to meet the needs of the Soviet rulers. Back of the concentration of investment in heavy industry lie the two basic motives that drive the Soviet in all its activities:

1. **The obsession** with maintaining power at the top. It is industrial concentration that secures Stalin's dictatorship against all internal opposition.

2. **The conviction** that only military superiority can guarantee the survival of the Soviet Union.

From the very beginning of his industrialization drive, Stalin had the problem of obtaining the capital needed to build heavy industry.

In Russia, the very nature of the Communist system closed the door on both foreign capital and private accumulation at home. So industrial investment has had to come from intense sacrifice by the Russian consumer.

• **How To Get Capital**—Under the Soviet system, there have been actually only two methods open for the accumulation of capital: (1) the continuous curtailment of

CUT THE COST OF PAPERWORK

and get more done—by making

DIRECT COPIES WITH ANTARA!

The Amazing Desk-Top ANTARA O-M Makes Low-Cost, High-Quality Direct Copies of Letters, Reports, Invoices and Records!

NO RETYPING! NO PROOFREADING! NO COSTLY "HUMAN ERRORS"!

The entirely self-contained ANTARA O-M brings you a low-cost, high-speed method of making clear copies of anything typed, written, printed or drawn on ordinary translucent paper. No darkroom, no stencils, no messy inks are required!

Anyone can learn to operate the ANTARA O-M in five minutes. You get your first copy in seconds – clean and dry – or up to 1,000 letter-size copies per hour for less than 1½¢ each.

The ANTARA O-M handles copies up to 16" wide, any desired length. Larger ANTARA machines make wider copies, and have greater capacity. *Write today for details.*

ANTARA Cuts Costs and Speeds Up Work in Many Accounting Operations!

A Broadcasting Company uses one clerk for three hours to prepare bills that took two clerks 28 hours before installing ANTARA!

A Life Insurance Company finds that ANTARA speeds up the issuance of new policies 50%!

A Container Manufacturer now prepares accounting records in 1/6 the time with ANTARA!

A Wholesale Manufacturer now finds that one girl can process 1,000 bills a day – nine times as many as before installing ANTARA!

A Department Store earns special "anticipation" discounts by using ANTARA to pay bills the same day merchandise is received!

ANTARA, Dept. MH-13
General Aniline & Film Corp.
Johnson City, N. Y.

Gentlemen: Please send me full information on how Antara can speed up work and cut costs in my business.

Name.....

Company.....

Position.....

Address.....

Cut Copying Costs... Use ANTARA*

Manufactured by General Aniline & Film Corporation, Johnson City, N. Y.

***Sold under the trademark OZALID in the U. S. A.**

consumption whether in the form of food, clothing, or housing; and (2) the use of slave labor.

Stalin has promised the Russian people a 40 to 60% increase in consumer goods by 1955. But that increase is tied to a 55% boost in productivity and a 70% boost in total production, neither of which is likely to be reached.

Real income has no chance to go up much in Russia where food is by far the most important item in the family budget unless Soviet farms produce far more than they do now. Agriculture fell short of the last Five-Year Plan goals, hardly kept pace with the postwar rise in population.

The chief reasons for Russia's food deficit are:

1. **Heavy losses** of agricultural capital suffered during collectivization.

2. **Continuous drain** on the agricultural population to supply workers needed badly for industrial development.

3. **Failure to invest** enough capital in agriculture to make up for the smaller work force now on the farms.

4. **Soil depletion,** which largely accounts for the fact that Soviet grain yields per acre in 1949 and 1950 were 6% under the average of 1925-1928.

Stalin has been well aware of the farm problem ever since the war. But he has insisted on giving heavy industry first priority in the Soviet economy. Now he apparently hopes to solve the problem largely by big irrigation and reclamation projects.

Stalin plans another attack on the food problem, as well. Agriculture is to be administered in the future with the same kind of centralized controls that are now used for industry.

What does Stalin have to show in the way of industrial strength after 25 years of consumer-starving industrialization? There is only one answer to that question. He has been far more successful than most Western experts ever believed possible. (McG-H Digest, Dec '52, p19).

Stalin has created an industrial structure that may rival that of all Western Europe combined before many more years. If you add Eastern Europe's heavy industry to Russia's, the Communists may be able to reach that point soon after 1955.

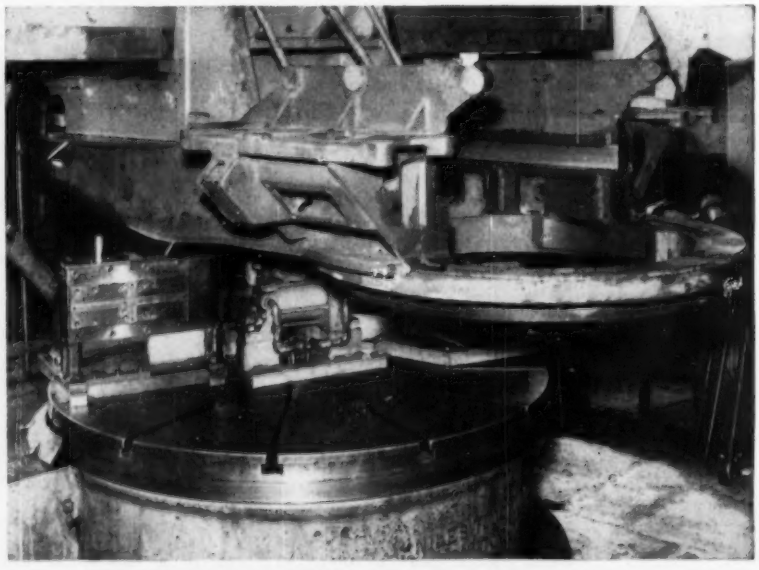
Economic planning has necessarily played a decisive role in Russian industrial development. They have planned the growth of heavy industry with considerable success, but the history of the last 25 years shows how far Soviet planners have failed to produce a balanced economy.

It is the Soviet political system that puts the severest strains on the planning setup. Any blunder in the allocation of material or its transport immediately gets reflected all along the line. And the Soviet system of premiums for plant managers tends also to stimulate deception and corruption.

What is ahead for the consumption-starved society that communism has fastened on Russia? And what can the outside world expect from its power-hungry rulers?

You can get some light on these questions from the line Stalin laid down for the Communist congress. The evidence, such as it is, seems to add up this way:

- **The Soviet is still too weak** to risk an all-out war with the West. But constant pressure around the Communist bloc's borders will continue.
- **The tensions in the Soviet Union are real.** Not only has Stalin's harsh rule produced despair and hatred, but constant harping on the danger of capitalist attack has produced fear.
- **The Russian people will be driven as hard as ever.** That is the price they will pay for any small increase in living standards.
- **The rate of industrial expansion** in Russia probably has reached, or passed its peak. Distances between raw-material sources and production centers are increasing. Raw materials of lower quality will have to be exploited.
- **The totalitarian Soviet state** may drive itself inexorably to world war. Or, if that does not happen, it may disintegrate, in time, under the weight of its own shortcomings. Stalin once said: "Production divorced from the satisfaction of the needs of society withers and dies." Stalin's failure to live by his own dictum may some day catch up with the rulers of Communist Russia. —Business Wk, Dec 20, p94



Rings Turned Upside Down

One 2,600-lb. weldment for the Joy continuous coal miner has a ring and flange to be turned at an offset location. Lewis Welding & Engrg. Co., to avoid tying up a large boring mill, hangs the piece from a fixture mounted on the cross-rail of a smaller mill. Fixture then slides back to turning position. Two tool heads fastened to the boring-mill table have tool blocks fed by hydraulic cylinders as cuts are made.—Am Mach, Oct 27, p113

Abrasive Belt Grinding Saves Diamond Bort

Grinding carbide cutting tools with an abrasive belt saves diamond bort, reduces grinding time, eliminates honing to remove burrs, cuts equipment costs, makes the ground tools last longer. Development work was done by Behr-Manning Corp. and Fenlind Engrg. Co.

The abrasive-belt machine employs a somewhat different principle from that of ordinary belt grinders. A conventional cloth and paper-backed silicon-carbide belt is mounted over a 5½-in.-dia. drive pulley and a 16-in.-dia. driven pulley. Belt width is 4 in.

An adjustable horizontal work table is in front of the larger pulley, and the tool being ground contacts the belt over this pulley. The machine operates dry, and work can be ground either offhand or with fixtures.

Surface speed of the belt is 2,350 ft. per min., compared with the usual diamond-wheel speed of 5,000 ft. per min. Grits used are 150, 220, 280, and 320. The belts cut rapidly when new, usually exceeding the cutting efficiency of diamond wheels of the same grit.

New belts cut rougher than diamond wheels, but belt greases improve surface finish considerably. As belts wear, surface finish improves. A worn 150-grit belt will give a 10-mu. rms. finish, and a 320-grit belt a 5-mu. rms. finish.—Am Mach, Dec 8, p102

Linings Cut Abrasion

Acid-water conditions and abrasive sand caused wear in cast-iron Humphreys spirals and other metal equipment at the Trail Ridge plant of Humphreys Gold Corp. Engineers developed a special lining for the spirals and now wear has been cut down.

What Humphreys Did—Spiral sections were sandblasted to obtain a clean surface free of all rust. The sections were then treated with several coats of a rubber primer and rubber cement to restore the original contour of the spiral. After the coats were cured, more primer and cement was applied. Neoprene liners, ⅛ in. thick, were cut and fitted into the spiral trough by means of a metal roller to obtain smoothness. Final treatment was given in a curing room where the spirals remained at an elevated temperature for about 20 hr.

Results—The sheet Neoprene lining is expected to last 4 to 5 years, based on present rate of wear. Unlined cast iron had deep grooves cut in it in about 18 mo.—Eng & Min J, Jan, p102

Fast Low-Cost Molding Now Eliminates Sewing

Now being used in the manufacture of automobile seat cushions and interior side panels, a new plastic procedure has completely eliminated sewing, tying upholstery buttons, and mechanical assembly of decorative metal strips. The new system reduces labor costs, increases wearability, and makes possible unlimited design possibilities, with cost of changeover from one design to another practically nil.

The process consists of laying up a sandwich of filler layers, backing, and facing materials, molding this sandwich in a mold constructed to the desired design, and at the same time molding on the chromium trim.

The sandwiches, whether for panels or cushioning, follow a similar production pattern. Filler layers are first impregnated with a bonding agent. Panels use an alpha-cellulose paper, impregnated with phenolic resin; cushions require tobacco cloth impregnated with synthetic latex. A 350° F. oven then partially curves this impregnant in about 3 min.

Next, patterns are cut from backing, filler, and facing materials. The three elements are trimmed and bonded together. A steel strip, plated with 0.008 in. of chromium and backed by phenolic impregnated paper, is loaded into the mold where the face pattern is to be applied. The entire sandwich is then inserted in the press and molded face down.

Chrome strips are crimped over and the product is finished.—Mod Plastics, Dec, p105

Spaghetti for a Giant

This breadboard set up is part of a magnetic-amplifier voltage regulator being designed by Bogue Electric Co. for U. S. atomic-powered submarine Nautilus. Board is Presdwood sheets on a two-tier steel table. Setup makes manipulation of components easy despite maze of wire.—Electronics, Jan, p226

Electrostatic Device Makes Presses Safer

New safety device for punch presses is an electronic control that utilizes an electrostatic-capacitance field. The field is radiated from two loops surrounding the bolster plate, ram, or other danger areas. When the field is unbalanced by a worker's hand, relays function to stop the press.

The device also helps to increase production. It can be adjusted to give intermittent cycle protection when stampings are large and time is needed between strokes to unload, clean dies, and feed.

Operators can work during any part of cycle not requiring protection without danger to themselves and without stopping the press.

Security Controls, Inc., makes the unit. It can also be applied to rubber mills, die-casting machines, shears, and other machines equipped with clutch and brake.—Iron Age, Nov 20, p133

ENJOY CLEAN COOL AIR...
CONVENIENT COOL REFRESHMENT

With These Advanced New Appliances for Home or Office by Servel

NEW DE LUXE SERVEL ELECTRIC ROOM AIR CONDITIONER

This quiet, efficient unit gives you the advantage of full 3/4 or 1 horsepower cooling which will keep your room in home or office cool as a mountain top on hottest, most humid days. Enjoy Servel made-to-order weather, luxury and comfort.

The Servel SUPER QUIET room conditioner filters out dust, soot and pollen, keeps walls and furnishings cleaner longer . . . reduces humidity. You breathe clear, drier air — feel better, stay fresh and alert.

NOTE THESE EXCEPTIONAL FEATURES:

- Choice of 3/4 or 1 H.P.; 60 cycle or 50 cycle, 115, 208, or 230 volt operation. 50 cycle models produce same full rated capacity as 60 cycle. (State cycle and voltage required.)
- New single dial control — simple setting.
- Setting for reduced power gives steady-comfort climate after daytime heat has subsided.
- Super Quiet cooling unit "floats"—reduces hum. Outside noises STAY outside.
- No-draft adjustable grilles.
- Smartly styled; mahogany or blende finish.

SERVELETTE—THE NEW PORTABLE ELECTRIC REFRIGERATOR

Puts Chilled Refreshments at Your Finger Tips

NOW—a handsome, compact PORTABLE electric refrigerator for office or home. Makes delicious chilled food and beverages quickly available—within easy reach—in any room. Styled as fine furniture, it enhances any decor, is unobtrusive and operates SILENTLY. The SERVELETTE holds a generous supply of snacks, canned and bottled drinks — with room for *tall* bottles. AC or DC models, 32 to 230 volt operation, choice of mahogany, blonde or white finish; makes 28 large ice cubes. Easy to clean. Open door makes handy tray. A new aid to quick refreshment — gracious hospitality. Ideal also for doctor's office for keeping vaccines, serums, perishable drugs.

Servel

For complete details on the Servelette and Servel Room Air Conditioner, write:

SERVEL, INC., INTERNATIONAL DIVISION

Dept. MD-3 • 20 Pine Street, New York 5, N. Y., U.S.A.

Or see your nearest dealer

Servel gas, kerosene, electric refrigerators & freezers

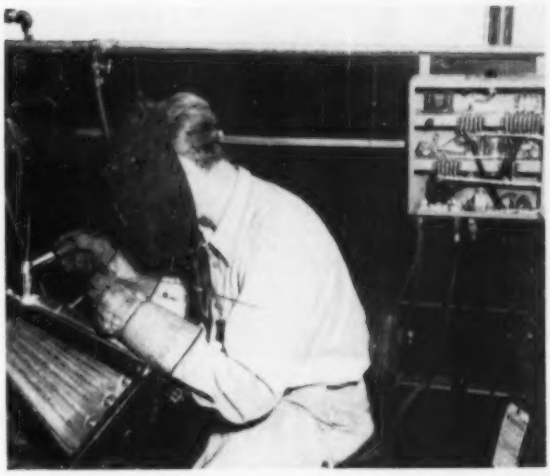
Florence gas, kerosene, electric ranges

Servel room air conditioners

Servel industrial air conditioning.

This Month's How To . . .

. . . save $38,000 a year



Eliminating wastage of argon gas from inert-arc welding is saving $38,000 a year for Ryan Aeronautical Co. on its annual $120,000 argon bill. The saving is made by an automatic timer device installed at 84 manual inert-arc welding stations.

When welding starts, argon and water are turned on by a timing sequence initiated by a microswitch in operator's generator-field rheostat control. When operator breaks the arc, gas and water are cut off automatically.

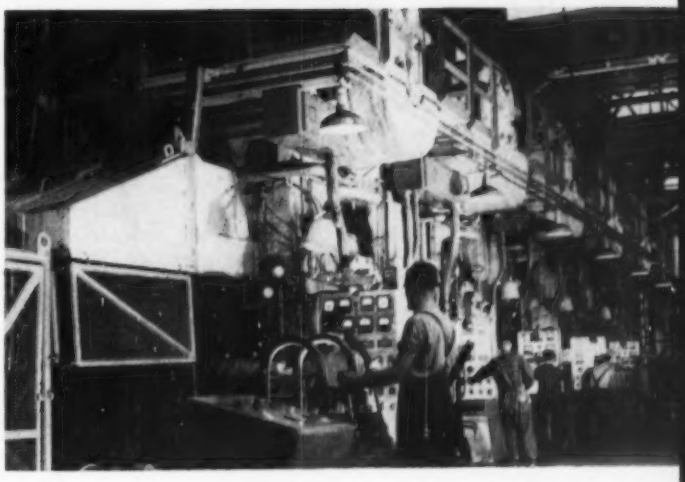
The tungsten electrode must be cooled in an inert atmosphere to avoid oxidation. So time-delay circuits cause the cut-off to occur about 8 sec. after the arc is broken.—Weld Eng, Jan, p56

. . . fight fires with converted plant truck

Here is a self-powered fire truck that travels everywhere and rides elevators in a multi-story, multi-unit plant. It was converted from a standard electric industrial truck by maintenance personnel at the Edgewater Works, Aluminum Co. of America.

Manned around the clock by a crew of three, it carries complete fire-fighting equipment, including hose, CO_2 cylinders, extinguishers, pumps, ladders, tools, auxiliary aids, and personal gear. Aluminum used in construction of truck helped hold weight down to a minimum.—Factory, Jan, p105

. . . increase British steel output



Rejuvenated steel works in South Wales are one step toward Britain's goal of 16½-million tons in 1953. Former output of 200 to 300 boxes of tinplate per week has been raised to 140,000 boxes per week.

Hot rolled coils of 0.093-in. maximum gage and 38-in. width are delivered to this cold-reduction mill, which has five mill stands, in tandem, equipped with work rolls 21 in. in dia. and 43 in. long. It operates at 4,500 ft. per min. Builder was United Engrs. & Foundry Co. of Pittsburgh.

Rolled strip is cleaned of all oil in a caustic dip, scrubber, electrolytic cleaner, and a second scrubber. It is then dried, annealed, cold-rolled in two temper mills, trimmed, dipped in a continuous tinning unit, cleaned, and run through a flow-melt unit to flow the tin on the surface.—Iron Age, Dec 25, p74

Plywood Waste to . . .

Flexible Hardboard

New Hardboard Process

Nearly automatic plant turns plywood "waste" into good-quality hardboard in first commercial use of semi-dry process using resin binder

HIGH-STRENGTH HARDBOARD is now in full production at Anacortes Veneer, Inc., in the first commercial use of a new semi-dry process developed by the Plywood Research Foundation. The plant is largely automatic; 30 men turn out 2½-million sq. ft. monthly.

The only liquid used in the process is 1 to 3% of a thermosetting resin, in contrast to the 2,500 gal. of water needed to produce 1,000 sq. ft. of ¼-in. board by the wet process. Air instead of water acts as the conveying agent for the fibers, so expensive equipment is not needed to handle the large volume of water.

The new product, called Armorbord, is made from solid Douglas fir that accumulates in plywood plants in various forms such as log centers and solid veneer trimmings. The process does not use bark but can use other types of wood besides Douglas fir. The finished hardboard, in 4x8-ft. panels, is light tan, with a hard, satiny surface.

The raw material is chipped into ⅝-in. square pieces, softened under steam at pressures of 20 to 50 lb. per sq. in. for 5 to 20 min., and then fed to a continuous cooker. Wax size about 1 to 3% is added to the chips in the cooker.

The chips at 275° to 300° F. feed by screw conveyor to mechanical grinders, which reduce them to individual fibers and tiny wood-fiber bundles with brushed-out ends. Resin is then mixed with the fibers in a continuous blender.

Fibers are fed to a felting machine and distributed by a rotor to the top of the felting chamber. They fall onto a moving belt, with some fibers flat and others on end. During pressing, fibers are arched or bent over, forming many microscopic interlocking trusses. These give the hardboard high impact resistance and flexibility.

The mat emerging from the felter is 6 to 10 in. thick. A precompressor reduces thickness to 3 in. before the mat is cut to desired length by a traveling saw. The hardboard press is conventional. Curing takes 8 to 10 min. at 325° to 375° F. Moisture content is brought up to 5 to 7% in a tunnel humidifier.—Chem Eng, Jan, p138

Retailing Changes

British retailing is slowly moving into a more competitive position: the consumer benefits

THE STORY of British retailing over the past few decades is a story of stagnation. The revolution in selling techniques that created the big U. S. supermarkets (McG-H Digest, Sept '52, p23) passed Britain by. Partly, this was the result of war, shortages, and rationing. Partly, it is what happens when government controls are piled on top of widespread industry cartelization.

• **Margin-Volume Factor** — The U. S. supermarket grew up on the basis of low margins, big volume. The British shopkeeper traditionally has built on high margins, even at the cost of low volume. But now the pressure is on.

Between wars, the number of people in the distributive trades increased greatly, but as times got bad, they distributed fewer goods per capita. Meanwhile, Americans were meeting dropping demand by slashing costs, setting up self-service, and doing a bigger job with fewer employees.

The British public is learning that agreements providing for exclusive dealings among members of a national list are common. These agreements force a merchant to be on the list to do business. And Britons are hearing about agreements that call for the maintenance of minimum resale prices under threat of boycott.

• **Time for Change**—Even if public opinion were not stirring up against the old patterns, some changes would be due. The high-cost pattern of British marketing was built on low-cost labor. The war changed that.

So retailers face a choice: either more restraints on competition (from the government or from themselves), more efficiency, or bankruptcy. Some have already decided—for greater efficiency. Self-service has made a start, especially in consumer cooperatives.—Business Wk, Dec 13, p72

Saves Extra Dye Run

Small lots are run through the regular knitting, dyeing, and finishing processes at Spalding Knitting Mills. They get no special attention.

Running samples through the production line provides information for determining production cost and time. The samples are sized each hour as usual, and the machines are set for normal operation. If the samples measure up to high quality on their test run, the mill has evidence that the same quality should be maintained on a regular run.

Colored bags easily identify lots. Red bags are for samples, green bags for rush orders, and white bags for regular production. These bags can be quickly located for a check of their position and for a prediction of their delivery date.—Textile World, Dec, p119

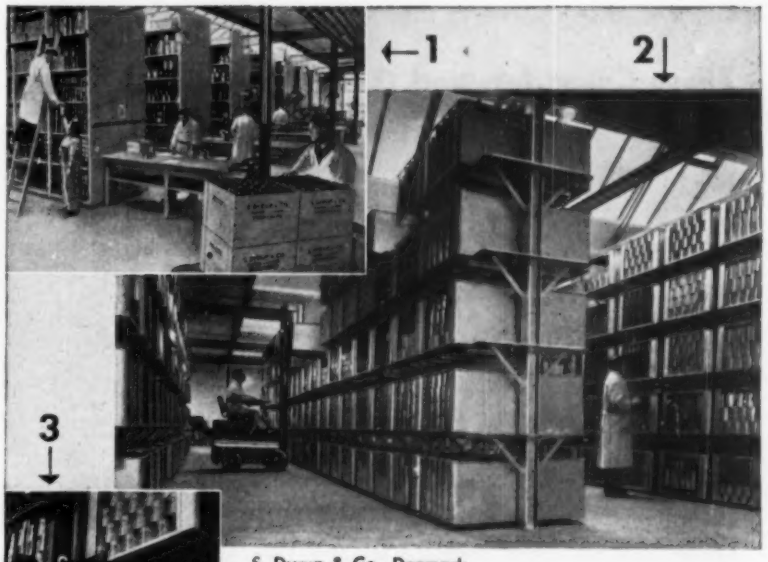
"C" Improves Grape Juice

Adding ascorbic acid to white grapes, after stemming and before pressing, prevents oxidization of extracted juice and thus preserves the original color while augmenting nutritive value. So says New York State Agricultural Experiment station, where the method was developed.

After juice from grapes thus treated is pasteurized, bacterial growth and enzyme activity are halted. Otherwise, flavor and color changes and sedimentation would result.—Food Eng, Dec, p185

Coming Next Month . . .

. . . will be the fifth in the series of country-outlook articles brought to you by the Digest. In these stories, we analyze for you the economic and political conditions of a country, particularly as they affect international trade and investment. We started with Canada; then came Great Britain in January, France in February, and Russia this month on page 15. Next month, we'll bring you the outlook on Brazil, showing what forces are at work trying to change the country's vast potentials into actual agricultural and industrial wealth.



S. Dyrup & Co., Denmark

IN DENMARK TOO.....
CLARK cuts costs

THIS IS HOW a progressive manufacturer cut handling costs. S. Dyrup & Co., in cooperation with their Clark distributor (A/S Lars Arnbak & Co., Copenhagen), engineered an ultra-modern handling system for their paint and lacquer factory. Built around Clark trucks, the Dyrup system has drastically reduced shipping errors and breakage. Fast, efficient machine work has replaced slow, expensive muscle-work—another dramatic example of how Clark equipment multiplies manpower and cuts costs.

Dyrup's paint and lacquer are packed in cans ranging in size from ¼ to 1 liter. Figure 1 illustrates the difficulty of storing and making up shipments of these small units under the old system. For economical storage, the bins had to be high. Stock clerks had to climb ladders to reach them—a slow, expensive arrangement.

A basic principle of good materials handling is to combine small unit loads into large ones for machine handling. That's exactly what S. Dyrup & Co. did, and the move has paid big dividends. Sheet steel containers and special open racks were fabricated to replace the old wooden shelving. (Figures 2 and 3.)

There are five bins in a tier. The top two serve as a "reservoir", while stock clerks easily collect orders from the bottom three. The bins have a large front opening which allows them to be emptied from their place in the rack. The fork truck driver removes empty containers and replaces them with "fulls"—the working rhythm is kept steady and unbroken. An electric-powered Clark truck (a "Trucloader", with 1000 lb. capacity) maneuvers easily in the 2.24 meter aisles.

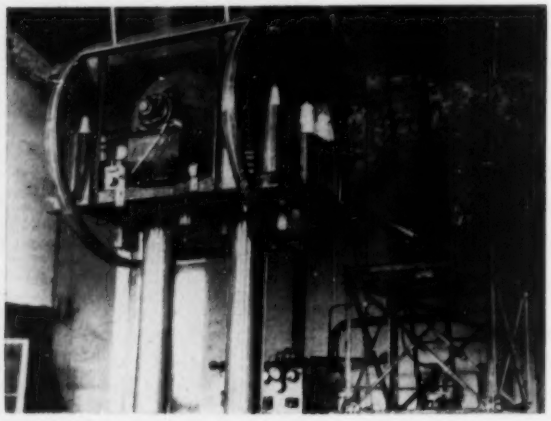
Increased safety with less manual labor—these are by-products of the handling systems in which Clark equipment plays a significant role. Faster production at less cost is the mark of modern handling.

Your own Clark dealer can show you the way to these benefits. For his name, write the Clark Equipment Company, Export Division, Battle Creek, Michigan.

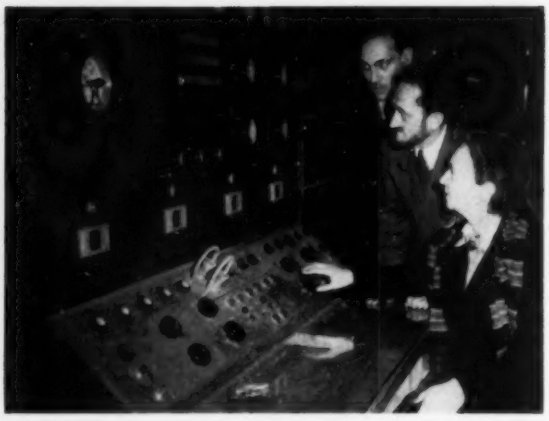
CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

EXPORT DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 73, MICHIGAN, U.S.A.
Please send: ☐ Material Handling News ☐ Condensed Catalog
Name
Firm Name
Street
City Country

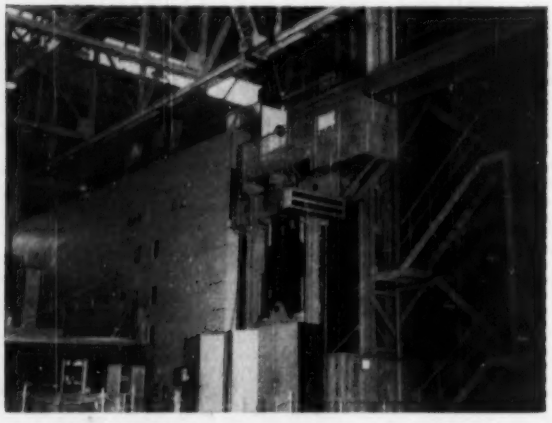
These Countries, and Others, Are Contributing to Steady World-Wide . . .



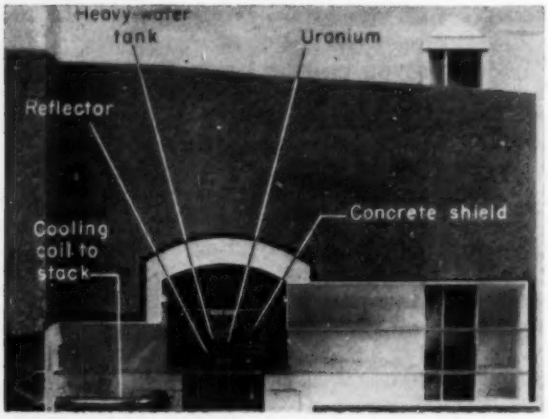
BELGIUM—This unique generator at Liege University operates on Pauthenier principle. Air stream of small glass particles carry acceleration charge to collector.



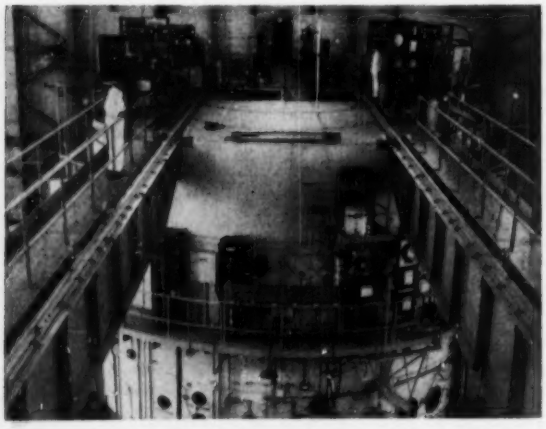
FRANCE—Irene Curie operates controls of Chatillon reactor. Looking on are M. Surdin, electronics chief, and Francis Perrin, head of French commission.



GREAT BRITAIN—Largest reactor in Britain is at Harwell. It heats Harwell offices and water by passing cooled air over heat exchangers to produce hot water.



SWEDEN—Its first reactor, being built in Stockholm, will be housed in underground rock chamber. Solid granite above reactor will absorb upward radiation.



CANADA—Natural-uranium, heavy-water reactor, regarded as Canada's most significant nuclear development, was built in 1947. Another reactor is now being built.

BRAZIL—University of Sao Paulo has this 30-Mev betatron, busy on research, such as on a new type of target for X-ray production, and a new Van de Graaf generator.

Progress in Atomic Energy

Discovering, developing, and applying the forces of nuclear energy take brains, money, and energy. What is happening and what is being planned in the western world will guide its future in peace and war

WORLD PROGRESS in atomic energy was surveyed by *Nucleonics* magazine as a fitting commemoration of the 10-year anniversary of the world's first self-sustaining nuclear chain reaction on December 2, 1942 at the University of Chicago. The report shows that:

1. **Thirteen** of the 15 countries surveyed (U. S. not included) will possess one or more nuclear reactors within the next decade.

2. **Shortage** of conventional energy resources in these countries makes nuclear power attractive.

3. **Money is being found** to exploit this field, regardless of the country size. But lack of money has held up some large-scale programs.

4. **Two cooperative programs** stand out. One is a joint Norwegian-Dutch research program. The other is the newly-formed ten-country European Council for Nuclear Research.

• **Switzerland**—Geneva will be the site of the European Council's laboratory, which will have several large particle accelerators. Switzerland itself is planning to build a heavy-water reactor. Six universities have research programs underway.

• **Belgium**—As principle uranium supplier to the western world, Belgium is highly interested in atomic energy. Two graphite-uranium reactors are planned, with one to be built this year and another in 5 years.

Three past Belgian achievements are: (1) development of a process to produce pure uranium in the metallic state, (2) contributions to nuclear-plate and emulsion techniques, (3) completion of the nuclear research laboratory at Catholic University of Louvain.

• **France**—Exploiting atomic energy as a source of power is the goal. Two new primary reactors using uranium to produce plutonium will be built in the next 5 years. Secondary reactors and pilot plants will be built in the following 5 years. After that, the French hope to build nuclear-power plants capable of economical operation.

France now has two reactors. The newest was put into operation last October. Its unique cooling system uses nitrogen gas compressed to ten atmospheres. More power per ton of uranium is the result.

• **Germany**—In 1789, uranium was first isolated by a German. In 1939, the fission of uranium was discovered by two other Germans. Since 1944, Germany has stood still in nuclear development. The future will depend on what its scientists are allowed to do.

• **Great Britain**—The explosion of Britain's first atomic weapon got the headlines, but a more significant development is Harwell's building of a low-power breeder reactor and designing of a high-power one. Britain also was the first country to heat a building with nuclear power.

Two other important projects are: (1) a slow-neutron, enriched-uranium reactor, designed as a prototype power unit for special uses such as ship propulsion, and (2) a slow-neutron, natural-uranium reactor, designed to develop power for electricity.

The real effect of the British atomic explosion is likely to be political rather than scientific—by increasing U. S. and British cooperation.

• **Italy**—Plans are now underway to build an experimental low-power reactor within the next 4 years. Her slow start was due to the task of recovery following the war and to lack of money. Another important cause was the disinterest of industrialists.

One organization, the Centro Italiano Studi Esperienze, has some equipment and is doing some research.

• **Netherlands**—Besides the Norwegian-Dutch joint program, the Netherlands' principal research has been done at the Instituut voor Kernphysisch Onderzoek.

• **Norway**—The joint program is based on Netherlands' uranium (bought from Czechoslovakia in 1939) and Norway's heavy water. A reactor has been built at Kjeller, near Oslo. Work is directed at Kjeller by a six-man board—three Dutch and three Norwegian.

Interest in Norway on atomic energy is directed toward its possible use for ship propulsion. This attitude is natural, considering that its merchant fleet depends on imported fuel oil.

• **Sweden**—With no access to uranium in quantity, the Swedish are pioneering in new methods to extract uranium from shale. The trouble is that the uranium content is low. But small lumps of koln, a hydrocarbon with 3,000 grams of uranium per ton, are embedded in the shale. So the koln and shale are flotation separated.

Sweden's first reactor will be finished late this year or in 1954. It will be built underground, protecting it from aerial bombing and allowing it to be built in Stockholm.

Use of radioactive materials is high in Sweden for medical, biological and industrial research. It imports more from the U. S. and Britain than any other country.

• **Canada**—A high-priority job for the next decade is to find a way to produce fissionable material more economically. Current

Two W&T Air Operated Master Chlorinators in the Lerma project, Mexico City

Internationally Dependable...

...W&T Equipment for the COMMUNITY

Through the years, and in many countries throughout the world, Wallace & Tiernan processes and equipment have contributed to the protection of community life.

Mexico City, the capital of Mexico, is an excellent example of how a civil administration, with the aid of W&T equipment, helps to safeguard the health and welfare of its citizens.

Recognizing that the availability of a safe water supply is a major responsibility to its community, the Mexican capital executed the fabulous Lerma project. Completed recently, after nine years of construction, at a cost of $25,000,000, this new project is capable of supplying 1,584 gallons of water per second. Water is brought from the headwaters of the Lerma River to storage tanks outside the city through an aqueduct which includes some seventeen tunnels.

Two Wallace & Tiernan Air-Master Chlorinators are installed in the Lerma project to insure adequate sterilization.

Wallace & Tiernan Chlorinators are well known internationally for dependable, economical performance. W&T's successful performance in the Lerma project is typical of the thousands of other installations all over the world.

Write today, without obligation, for technical literature on W&T Chlorinators for every municipal and industrial need.

WALLACE & TIERNAN PRODUCTS FOR COMMERCE, INDUSTRY AND THE COMMUNITY

Ammonia Control Apparatus—Cathodic Protection Systems—Chlorinators—Chemical Feeders—Decay Control Processes for Produce—Electric Marine Beacons—Flour Processing Chemicals—Magnetic Separators—Pharmaceuticals—Precision Instruments—Sifters. F-91

AGENTS IN MOST COUNTRIES

WALLACE & TIERNAN CO., INC.

NEWARK 1, NEW JERSEY, U. S. A.

contributions to nuclear science include: (1) production of raw material and (2) production, distribution, and research in use of isotopes.

Canada has one of the highest-flux reactors in the world and is getting a still larger one for research and production of isotopes and plutonium. The next step will be one or more power reactors.

The new reactor is a heavy-water unit being built at Chalk River. Finish date is scheduled for 1954 or 1955.

• **Mexico**—Last fall, Mexico opened at the University of Mexico a new physics laboratory containing a 2-Mev Van de Graaf accelerator. There is some talk of building a small reactor. Uranium for the reactor will probably come from Mexican sources.

• **Argentina**—After a big splurge in newspapers last year, the Argentine atomic-energy program has showed signs of fading out, especially that part carried on by Richter. But informed sources reveal that some reputable Argentine physicists are carrying on studies apart from Richter's questioned project.

• **Brazil**—A new agency, Conselho Nacional de Pasquisas, was formed last year to promote nuclear development. Its emphasis is on (1) training of personnel, (2) surveying of Brazil's resources, (3) development of plants for separating uranium and thorium from ores, and (4) installation of modern particle accelerators. Plans for a 450-Mev synchrocyclotron are well advanced. This accelerator will be installed at the University of Brazil.

• **Australia**—Interest in Australia centers around (1) the discovery of what appears to be rich deposits of uranium and (2) the need for a source of cheap, easily obtainable power.

Two major ore fields are being developed—one at Radium Hill in South Australia, the other at Rum Jungle, Northern Territory. U. S. Export-Import Bank money is helping develop the first field.

• **India**—Scientists in India believe they are soon ready to build a research reactor. Newly found deposits of uranium-bearing ore can make India self-sufficient in uranium.—Nucleonics, Dec, p7

Construction Methods, Trends Around World

►**Turkey:** An extensive program of hydroelectric power development is moving fast in Turkey, with eight stations under construction that will have a combined eventual capacity of 222,145 kw., and another six projected for an additional 119,280 kw.

Three types of projects are being considered: (1) small municipal and industrial, usually thermal power, (2) medium-sized hydro plants, and (3) large multipurpose projects for power, flood control, and irrigation.—Eng News-Rec, Dec 25, p50

►**Japan:** A seven-plant development program that will involve expenditure of $1-billion or more is under study in Japan now by representatives of the World Bank and the Japanese.

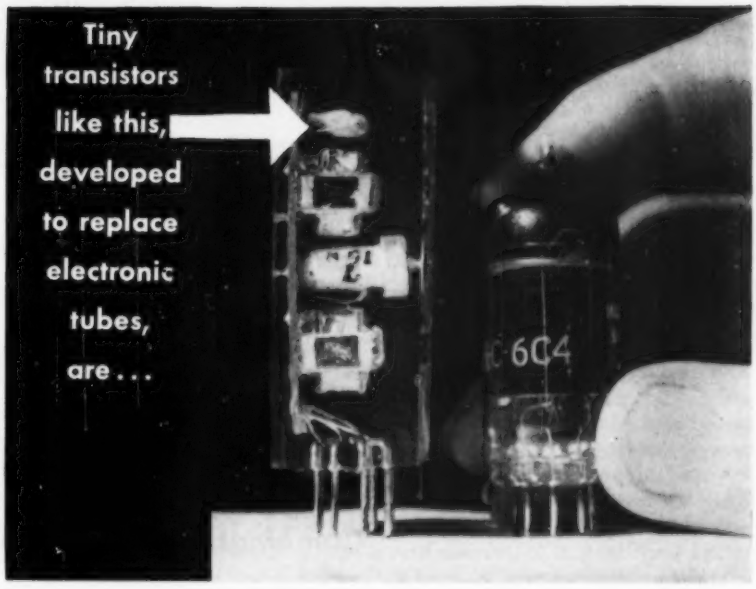
Japan has applied for a loan from the bank totaling $860-million, of which $318-million is for dams and power stations on seven rivers. An equal amount will go for construction of a superhighway to run from Tokyo to Kobe.—Eng News-Rec, Jan 1, p43

►**Britain:** The steel industry is nearing its goal of boosting its output from 12,750,000 to 20,000,000 tons annually. Present capacity is 17,250,000 tons. The balance will be added in the next 5 years.—Eng News-Rec, Jan 8, p60

CO_2 Cools Carbide Tools

Time is saved, tool surface is improved, and wheel wear is reduced when carbon dioxide cools carbide tools during offhand grinding. The CO_2 tends to clean the wheel of dull grit and extracts heat from the tool surface. Keeping the wheel clean improves the cutting action and reduces the heating effect.

An installation at the Monarch Machine Tool Co. includes two 600-lb. dry-ice converters outside the tool crib. The CO_2 is directed to the grinding wheel through an 0.023-in. orifice. Although CO_2 is an expensive coolant, Monarch believes that the extra cost is justified.—Am Mach, Dec 8, p97



. . . Now on the Market

Raytheon Mfg. Co. springs pleasant surprise for world electronics market by announcing mass availability of junction-type transistors for commercial use

THE LATEST WONDER from an industry where wonders are stock in trade is the transistor.

The tiny device (McG-H Digest, Oct '51, p52) does the work of conventional electronic tubes but generates no heat and is a miser on power. Until Raytheon announced transistors were ready for market, electronics people in the U. S. were making no commitments.

Some said it would be years before transistors could become generally available. Others claimed they would not come until the Army, under whose contract equipment was developed, decided to loosen up. They added glumly that high prices then would make them prohibitive.

• **Prices Still High**—Raytheon's price is high for routine use, but hearing-aid manufacturers are already buying. They figure people will pay higher initial prices for a device that will more than halve battery costs averaging $30 to $50 per year.

Sonotone Corp. put the first partly-transistored hearing aid on sale last month. With battery, it weighs 3 oz.; it is thinner, 25% smaller, and twice as powerful as previous Sonotone quality aids. "B" battery life, usually around 27 days, should reach 6 months or more, Sonotone claims.

• **Contracts**—Cause for transistors hitting the market so abruptly can be traced partly to a $5.4-million U. S. Army contract awarded late last fall to four top manufacturers: General Electric Co., Radio Corp. of America, Raytheon Mfg. Co., and Sylvania Electric Products, Inc.

• **Possibilities Rich** — Outside their lower power needs and long life—big considerations in themselves—are the transistor's matchstick size and its ability to take shocks. As soon as production makes downward price adjustments possible, you can expect transistors to make big inroads in the fertile electronics market all over the world.—Electronics, Jan, p5

Boost Fabric Quality

Minimum details attached to its quality-control system allows knitters to concentrate on quality. Yet the system avoids the expense of extra supervision

THE QUALITY-CONTROL SYSTEM at E-Z Mills, Inc., Georgia, operates with the mills' workload system to allow the knitters to devote maximum attention to quality knitting. The system is intended to be as simple as possible to avoid the heavy supervision that complicated procedures require.

▶ **Yarn Supply Is Kept Small**—Knitting yarn is bought from a number of spinning mills and moved to the plant in E-Z Mills' own fleet of trucks. This system maintains a supply of fresh yarn, reduces the storage problem, and eliminates the need for conditioning the yarn before knitting.

When the cartons are opened by the yarn carriers, a spot check is made of the cones. The knitters also observe the quality of the yarn. Any yarn that is not up to E-Z standards is rejected.

An allowance of 1% is made for the difference between yarn weight and fabric weight caused by lint and yarn waste from the tail end of the cones. The lint is kept away from the machine and the yarn by fins mounted on top of the stop-motion brackets. Lint is blown off the machines once every 45 min. before the fabric inspection.

Also, once every shift, the lint is blown off for machine cleaning. At the close of the last shift at the end of the week, production is stopped an hour early for blowing off and cleaning.

▶ **Lots Kept Separate**—E-Z Mills does not mix its yarn. Lots from the different suppliers are kept separate, and all yarn in a particular lot is used before another lot is brought to the knitting room. Control of the lot allows a machine to be adjusted and set for a particular lot and allows the machine to run on a particular setting for the duration of the lot.

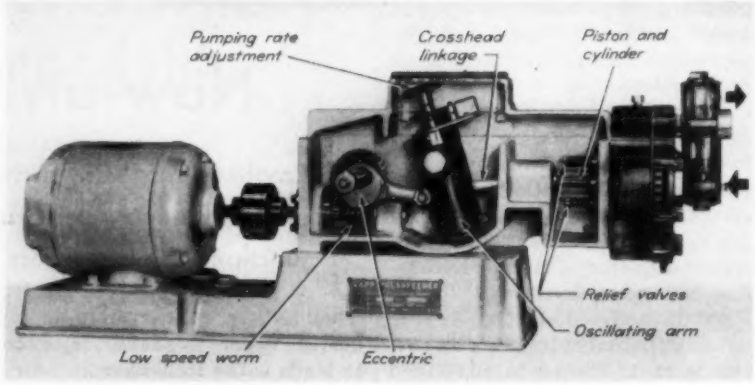
Three fixers on each shift keep the machines to their proper adjustments. The knitters are sensitive to the slightest defection in quality operation and are quick to call on the fixer to remedy an abnormal variation. This cooperation between knitter and fixer is essential to E-Z's quality knitting.

A special inspector on each shift checks the fabric on each machine as a safety factor in the control of quality. He notifies the knitter and the fixer if a variation from the mill standards is observed.

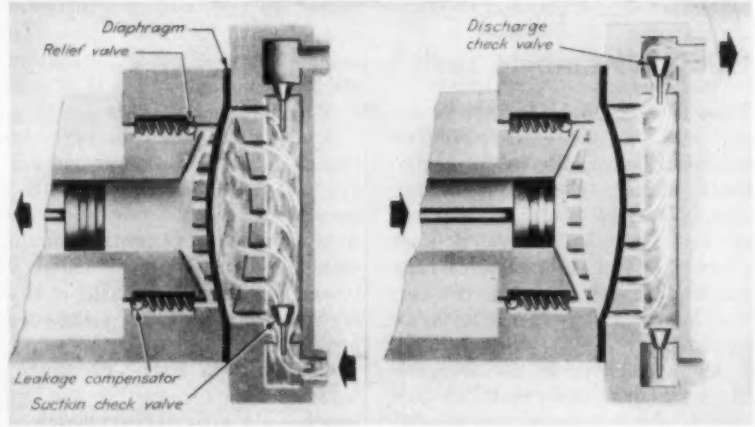
▶ **Fixing Done in Repair Shop**—Machines that require more than a minor adjustment are removed from the line and replaced by a machine from storage. This change is done efficiently because the mill keeps a sufficient number of spare machines in storage and each machine has an individual drive.

Major machine overhauls are performed at least once a year. The semi-flat machines, which have only cylinder needles, are overhauled every 6 months.—Textile World, Jan, p124

Combination Piston-Diaphragm Pump . . .



. . . Delivers Exact Amounts of Fluid



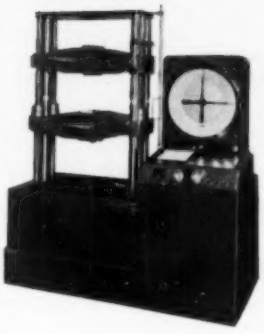
Pulsafeeder, made by Lapp Insulator Co., pumps by combined action of piston and diaphragm. Piston movement causes oil to displace diaphragm, which does actual pumping. On suction stroke, piston hydraulically displaces diaphragm to draw in fixed amount of liquid through suction check valve. Discharge stroke then pumps liquid through discharge check valve. Length of piston stroke determines pumping rate and is adjusted by a handwheel. Unit requires no stuffing box.—Prod Eng, Nov, p165

FROM DINNER BELLS TO MORTAR SHELLS

You can test practically *anything* with a versatile

RIEHLE

Universal Testing Machine . . . from small specimens with a relatively low-rupture-point to large, high-yield-point specimens. That's because every Riehle Pendomatic Universal Machine has 5 scale ranges — the equivalent of 5 testing machines in one. Ask your Riehle representative or write our factory for illustrated catalogs on Riehle Universal Testing Machines with hydraulic loading unit or screw power loading unit.



RIEHLE TESTING MACHINES

Division of American Machine and Metals, Inc.

Foreign Sales Department, 233 Broadway, New York, U.S.A.

TWO IMPORTANT SERVICES AVAILABLE TO YOU . . .

Both designed to bring you the latest facts about your industry and the important changes being made in it around the world. Keep up to date . . . be well informed . . . write today for all of the facts.

1. INDUSTRY REPORTS

Here are sample outlines of two of our *thousands of reports:*

WASTE WOOD UTILIZATION

Working up scrap; low cost plastics; power gas; exchange; edgings; trimmings; grades; sizes; prices; paper manufacture; building board manufacture from waste and less valuable wood; wood-briquetting; utilization of lignin; wood saccharification; etc. **$13.50**

PREVENTING MACHINE AND MAN IDLENESS

Management plans to determine production capacities. Forms and illustrations to insure full-time utilization of machines and men. Visual aids to show graphic condition of work schedules, etc. **$9.50**

2. CONTINUOUS RESEARCH SERVICE

Keep constantly informed, 12 months of the year, of new developments affecting your products or services. You automatically receive everything pertinent that appears in technical and trade publications, patents, research data, announcements from manufacturers, and numerous other sources. You are informed as to the latest discoveries, formulas, processes, methods, etc. as they evolve. Take advantage of opportunities you may otherwise overlook.

Write today stating your product or service. We will supply, without obligation, complete information on how we can help you.

Serving over 33,000 firms throughout the world.

Among the fields covered:

Chemistry	Power	Mining	Plant Management
Metals	Electronics	Paper	Textiles
Construction	Food Processing	Glass	Leather
Electricity	Mechanical Design	Petroleum	Ceramics

And many others

J. J. BERLINER & STAFF

840 Broadway, New York 3, N. Y., U. S. A.

Cable Address: STAFBERLIN New York

Established 1924

FACTORY OPERATORS!

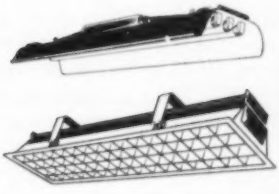
Get Brighter Light!
Increase Production!
Save Money!

WITH SYLVANIA FLUORESCENT LIGHTING EQUIPMENT!

Bright, clear light is essential for safety and for accurate work. Get it with Sylvania fluorescent lighting equipment—"Fluorescent at its Finest!"

Fluorescent Tubes

Famous for long life, color retention, and brightness, Sylvania fluorescent tubes have a 7500 hour rated life. That means they last 3 years in offices and factories, 2½ years in stores. They save you tube and labor replacement costs. Reduce your manufacturing costs, too, by helping your employees to see better—work better—make fewer mistakes due to fatigue. Available in all sizes and types, standard and instant start.



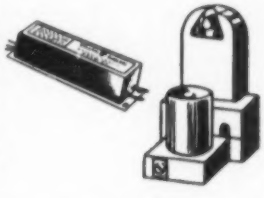
Fixtures and Troffers

Sturdy Sylvania fixtures and troffers can be mounted in an unlimited number of arrangements. Reflectors have a hard-baked Miracoat finish which provides a reflection factor of 86%. Easy to install and maintain, the fixtures resist corrosion and rust . . . despite high humidity. Available for every industrial need.

Wiring Devices

Sylvania starters and lampholders are tough, long lasting. Robot COP (Cut Out Premium) Starter keeps good tubes on the job, cuts out bad ones, then resets itself automatically. The Sylvania COP Starter is reset by pushbutton. For lower cost installation, the GLOSTAT starts fast, lasts long, takes terrific punishment.

Sturdy, long life, Sylvania ballasts are manufactured under most rigid quality control. Assure constant protection for fluorescent circuits.



Whatever your lighting need, Sylvania can best provide for it. For complete information about Sylvania lighting equipment, attach coupon to your company letterhead and mail it today!

Sylvania Electric Products, Inc.
International Division—Dept. MG 3-53
1740 Broadway, New York 19, N. Y., U.S.A.

Please send me Sylvania's FREE Lighting Products Ordering Manual.

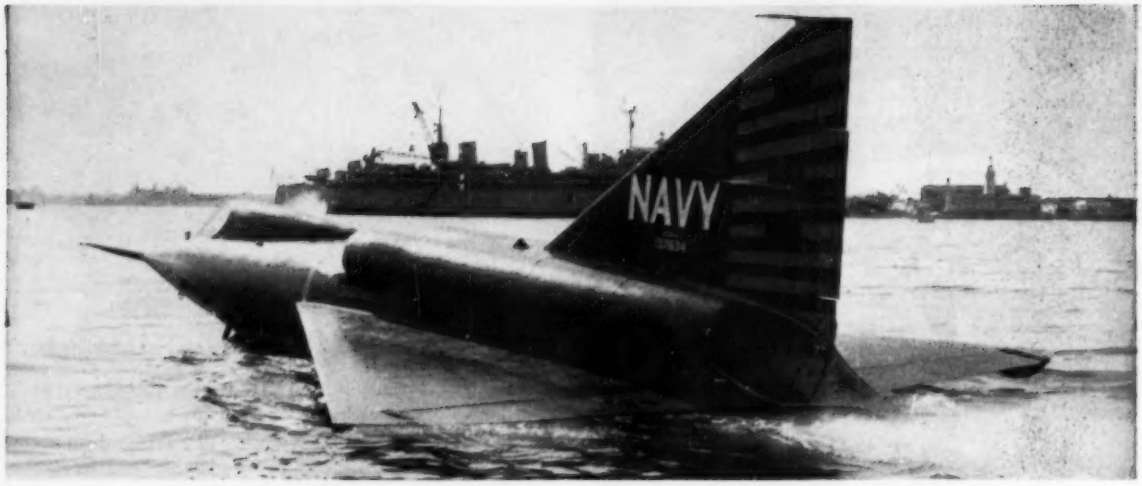
*Name*_____

*Address*_____

*City*_____ *Country*_____

SYLVANIA ELECTRIC

BIRDSEYE LAMPS | INFRARED HEAT LAMPS | INCANDESCENT BULBS



Sea Trials for Convair Sea Dart Proves Hydro-Ski Practical

Radical new Convair XF2Y-1 Sea Dart delta-wing flying boat fighter, world's first, taxis up San Diego Bay with its wings barely out of water. Strut sticking into water near nose is part of hydro-ski landing gear. Power plants are two Westinghouse J34s. Navy has ordered a dozen F2Ys at $2,250,000 each.—Aviation Wk, Dec 29, p9

Sliding Forms Help Raise Silo in 8 Days

Sliding forms and a continuous pour erected in 8 days a stone-storage silo 127 ft. high, measuring approximately 115x37 ft. on the sides. Macdonald Engineering Co. was the contractor.

The monolithic storage unit is a cellular structure consisting of two rows of rectangular bins. Each row has four bins. Walls of the bins were formed by building rectangular wood forms to the size and shape of the individual cells and placing them on the foundation slab. These forms are 4 ft. high.

Adjacent form walls were locked together with steel yokes. These yokes served to hold the individual bin forms in place and supported slip-form lifting jacks.

A slip-form jack was mounted under the top cross-bar of each yoke. These jacks follow the principle of a ratchet-type pump-track jack, except that they climb a special rack fastened to a pipe sleeve. The pipe sleeve is slipped over a vertical 1-in. round rod and held firmly in place with an eccentric dog.

When the jack has climbed the full length of the rack, about 18 in., the pipe sleeve and rack are raised on the vertical rod, dogged off, and the climbing continues. The vertical rods rest on the foundation slab and are made continuous to the full height of walls.

With every pump of the jack, form and working platform are raised ¼ in. Jacking is continuous as long as concrete is being poured into the top of the wall forms. Speed of jacking is regulated so that the concrete has set by the time it emerges below the 4-ft. form.—Const Meth & Equip, Jan, p64

Ethylene Oxide Process

New fluidized bed process for commercial production of ethylene oxide by direct oxidation of ethylene with air has been developed jointly by Atlantic Refining Co. and Vulcan Copper & Supply Co. Here's how it works:

A gas stream moving rapidly in a fluidized bed passes through an agitated suspension of a fine, solid catalyst. Agitation keeps temperature uniform in the catalyst bed and prevents formation of hot spots. End result is uniformly high yields of ethylene oxide.

Vulcan, which has exclusive rights to design and build commercial plants, has operated a pilot plant successfully.—Chem Eng, Nov, p114

Handling Changes Jump Fudge-Line Output

Improved handling methods at Just Born's candy plant in Bethlehem, Pa., has doubled production of fudge. These are the significant changes:

1. **Metering** liquid sugar and corn syrup directly into two premix tanks has abolished former batch-scaling. Tanks are stainless steel of 3,000-lb. capacity.

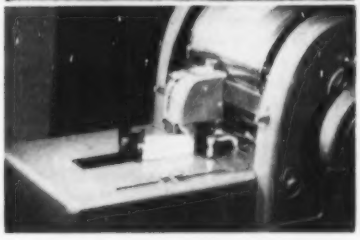
2. **Preparing** bulk ingredients in premix tanks with agitation and preheating assures continuous flow into batch cookers. Milk and part of the hydrogenated coconut oil are added in the premix tanks.

3. **Controlling** temperature automatically terminates the cook in the 550-lb. cooking kettles. The operator need only fill and empty the kettles. Also, controlling the cooking has increased production.

4. **Feeding** the product by gravity directly from cookers into a horizontal mixer eliminates delays. The mixer is a jacketed batch-type unit equipped with an automatic time controller. Chocolate liquor, butter, flavor, and more hydrogenated coconut oil are added to the cooked fudge in the mixer. After 2 min. of mixing, the fudge is poured on cooling slabs.—Food Eng, Jan, p87

Why They Like Their Work

If you want to attract and keep the highest type personnel in your organition, put yourself in the employee's place and ask this question: Why would he like his work?— Am Business, Dec,p8



A Sense of Belonging

Because: (1) he feels that he belongs to a team, (2) he feels that you head a thriving, progressive business, (3) he is proud to tell where he works, (4) he wants to hear complimentary things about his company, (5) he wants to be proud of the product or service on which he works, (6) other people in the organization treat him with respect and friendliness, (7) when he visits other departments, he is received in a spirit of full cooperation and harmony.

A Sense of Participation

Because: (1) he is not subject to quick, arbitrary rule changes, (2) he is asked to help reach decisions, (3) he is consulted before his work is changed, before methods are changed, or before he is transferred, (4) his suggestions are analyzed, and, if not adopted, he is told why they cannot be used, (5) he is well informed.

The Pride of Achievement

Because: (1) he has standards of performance, (2) he is told when he does good work, (3) he is not criticized in front of his associates, (4) he is rewarded for extraordinary performance, (5) he has seen others win rewards for good work, (6) he has seen company executives stand by people who were unfairly criticized, (7) he knows when he has helped to reach an organization goal, (8) he knows company goals.

The Buildings' Interior

It has: (1) clean, dry place to hang outer clothing, (2) clean, well-appointed, well-kept rest rooms, (3) well-lighted aisles and walkways, (4) reasonably quiet work areas, (5) well-lighted work areas, (6) proper temperature maintenance in work areas, (7) room to work, (8) reasonable freedom from interruptions and distractions.

The Working Area and Tools

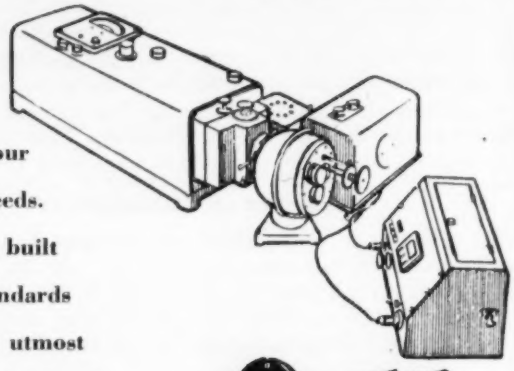
It has: (1) a good desk, or other working surface, (2) adequate supply of all needed tools, (3) good writing facilities, a place to keep things used away from desk top, (4) a good system of obtaining supplies, (5) good supply of proper reference books, (6) quick repair and service of machines, (7) cheerful working area, color on walls, glare-prevention at windows, (10) reasonable cleanliness.

The Working Methods

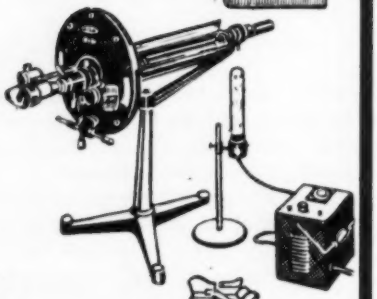
It has: (1) a manager or supervisor who knows the business, (2) clear, understandable, and consistent instructions and work assignments, (3) no conflicting orders or instructions, or reporting to people who have no authority, (4) prompt decisions to fair questions, (5) adequate planning to avoid last minute rushes, (6) impartial treatment, (7) promotion or raises based on performance.

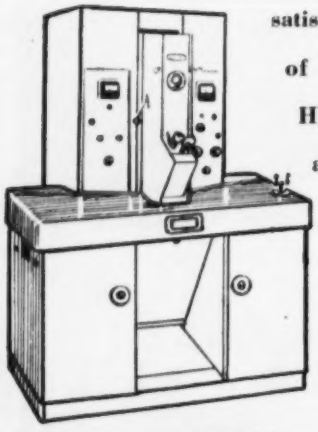
Hitachi

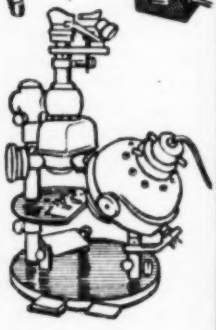
PRECISION SCIENTIFIC INSTRUMENTS

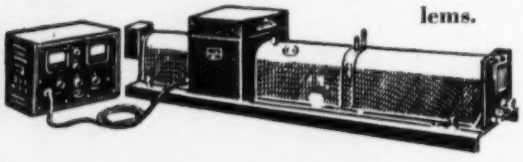


See or write HITACHI first for your scientific precision instrument needs. They are of the highest quality built to meet the most rigid standards which will give you the utmost satisfaction for your particular kind of work in research analysis, etc. HITACHI instruments mean dependability for better work and production. Whatever your problems are write us immediately and the necessary information and data will be supplied to help you solve your scientific precision instrument problems.









Electron Microscopes, Vacuum Evaporators, Electron Diffraction Apparatus, Mass Spectrometers, Tiselius Apparatus, Photo-Electric Spectrophotometers, Photo-Electric Photometers, Pulrich-type Universal Photometers, Polarimeters, Abbe Refractometers, Duboscq Colorimeters, Sugar Refractometers, Protein Refractometers, Blood Glucose Colorimeters, Absorption Cells, etc.

Hitachi, Ltd.

Tokyo Japan

Cable Address: "HITACHY TOKYO"

All Codes Used

Main Office: 4, 1-chome, Marunouchi, Chiyoda-ku, Tokyo, Japan

TECHNICAL SHORTS

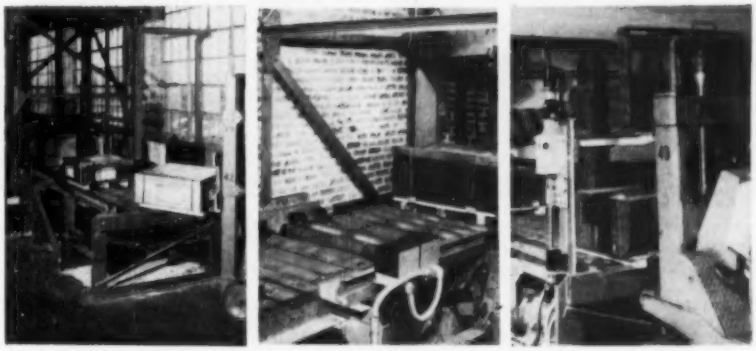
Dims Your Fluorescents—New light-control system, developed by General Electric Co. engineers, promises to change brightness of fluorescent lamps by a simple knob. Lamps maintain original color during dimming process. The system is still in the design stage and not yet in production.—Factory, Dec, p144

More Power Steering—A brand-new type of power steering for automobiles will appear this year. The design will take its power directly from the engine, use less power than required to run the hydraulic pump in existing systems, and cost less.—Am Mach, Jan 5, p97

Copper Coating—Now you can paint a heat-resistant, solid copper coating on metal surfaces. The paint, made by Speco Inc., consists of copper flakes in a silicone base. It withstands temperatures to 1700° F., prevents rust, resists corrosion from mild acids.—Prod Eng, Dec, p5

Probe Tests Tubes

Instrument finds "hot spots" and poor circulation areas that cause excessive scale formation in boiler tubes. Also, it finds badly pitted and corroded tubes before failure. Electromagnetic probe inserted in tube registers details of its trip on meter outside boiler. Readings are usually taken every 1 to 2 ft.—Power, Dec, p154



Conveyor Smooths-Out Unloading Operation

Automatic lowerator-conveyor system at Continental Can Co.'s Baltimore plant moves tinplate bundles from unloading area to basement storage. Bundles from highway trucks are moved by fork truck to first-floor feeder conveyor, lowered to basement take-off conveyor by lowerator, and again moved by fork truck from conveyor discharge point to storage. Operation is controlled by photoelectric cells. Benefits: unloading time for highway truck cut 66⅔%, shorter fork-truck runs, one truck needed instead of two, one elevator freed for other use, less aisle congestion. Gifford-Wood Co. made the system.—Chem Eng, Jan, p214

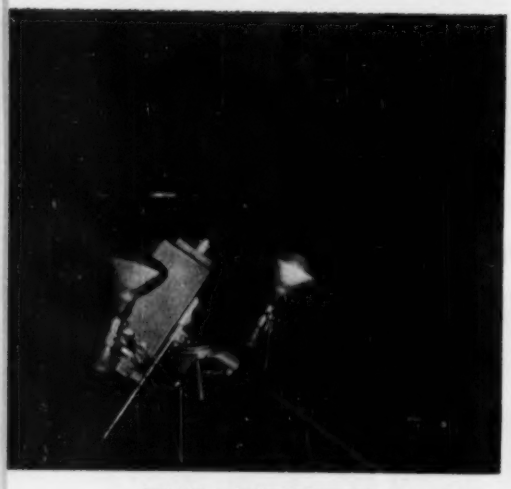
Thermostats Show Asphalt Level—Thermostats solved problem for Flintkote Co. of keeping a continuous check on operation of a liquid-level controller in a hot-asphalt tank. Thermostats, mounted on the wall of the tank, are connected to three pilot lights. Connectors allow plant men to connect any three thermostats to the three pilot lights, depending on liquid level required. Each thermostat extinguishes its pilot light when covered by hot asphalt, thus indicating liquid level.—Eng News-Rec, Jan 8, p64

Pressure Welds Aluminum—Hand tool for butt-welding aluminum wires up to 0.07-in. in dia. makes sure bond without heat, current, acids, or chemicals. Pressure on wires, applied by squeezing plier-like handles, produces an intermolecular flow of aluminum. Resulting bond has greater tensile strength than the wire itself.—Electronics, Dec, p224

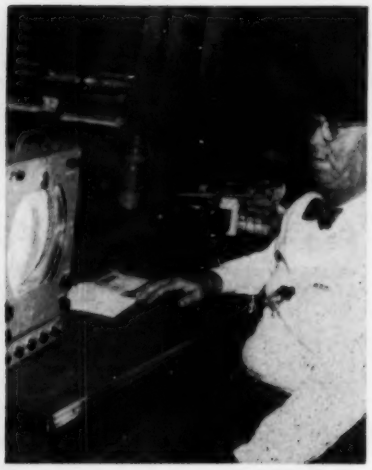
Fast Pipe Testing—Fully automatic hydrostatic pipe tester at Jones & Laughlin Steel Corp. handles pipe from 2⅜- to 7-in. OD. and 16 to 50 ft. long. Average test cycle is about three pieces per min. Built by Taylor-Wilson Co., unit has operating cylinders actuated by water.—Iron Age, Jan 8, p104

Cheaper Props—Reynolds Metals recently developed an 18-ft. helicopter rotor blade made by an aluminum extrusion process. Price for the new blade in quantity production will be about $65.—Aviation Wk, Dec 29, p11

Sells Packaged Coal—Latest idea in packaged-fuel merchandising is new low-cost depot installed by St. Paul Packaged Fuel Co., Minn., in 50 gasoline stations. Each depot holds 3 tons of high-grade coal in 15-lb. packages, sold five for $1. Coal is suitable for use in stores, furnaces, and fireplaces.—Coal Age, Jan, p146



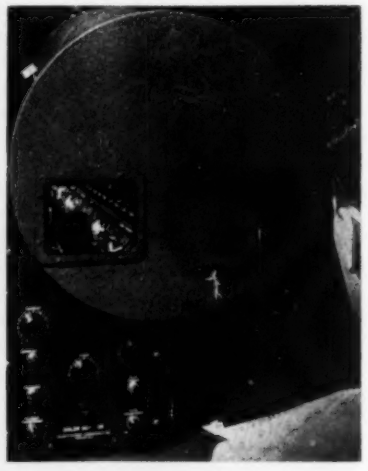
BRAKE INSPECTION proved successful with ITV in Baltimore & Ohio's yard. Camera inspects engine.



FOREMAN CHECKS detail picked up by camera located in pit under locomotive. He need not move from office.

IMAGE of furnace interior on viewing screen helps workman control furnace feed without being subject to heat.

TIME STUDIES and studies of production methods could be made from a distance. Unseen ITV would not interfere with workers efficiency, thus give accurate results. Also ITV viewer would allow group participation in studies.



VIEWER SHOWS exactly and at all times what is happening on the production line. Color viewer is shown.

Television Goes to Work

Problem: Perhaps you have an operation that you would like to watch but cannot
Solution: Industrial television will provide you with continuous observation
Benefits: You see the operation in safety and convenience exactly as it happens

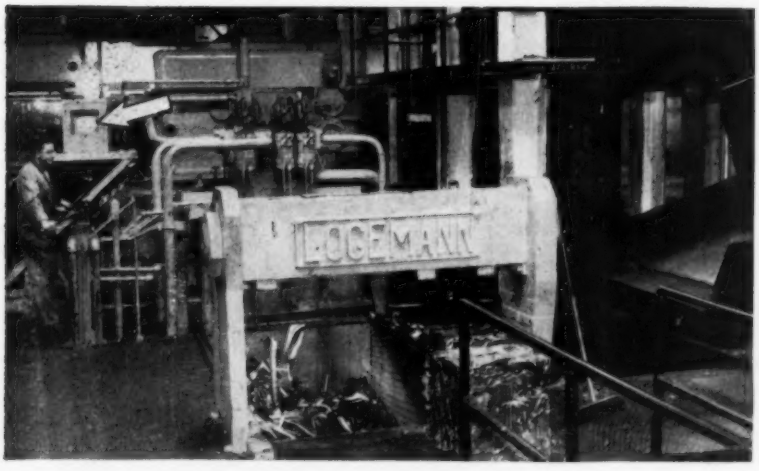
TELEVISION has carved its place in the entertainment world. Now it is reaching out into industry.

Here is where industry is using television:

- Wherever direct observation is too dangerous, inconvenient, or expensive.
- Where several processes must be watched at once.
- Where large groups must view the same operation.

These are only the basic applications. The possibilities of industrial television (ITV) stagger the imagination. The automatic push-button factory of the future will need ITV to monitor some of

SMOKESTACK IMAGE on monitor screen tells boiler operator when and how much to adjust boiler combustion. Camera is located 3,000 ft. away. Monitor is located on boiler control panel upper right.



ITV SYSTEM SPEEDS operation of scrap-metal baling machine. Operator sees condition of scrap conveyor and basket and can control baler accordingly. Both conveyor and basket are hidden. Without ITV, more men would be needed.

its production lines. It can provide a wide-awake security patrol. It can eliminate hazardous jobs in steel mills and other plants.

It can see what goes on when a machine or engine takes a dangerous test. It can verify signatures in banks. It can control materials handling. And it can help direct traffic in railway yards and truck terminals. One ITV manufacturer sums up his product's potential this way, "It helps industry see where it cannot look."

• **Some Caution**—Today, high costs of relatively new and specialized equipment limits ITV's application opportunities. But experts claim that the apparatus can be mass-produced and sold within the price range of other business machines of comparable size and complexity.

Manufacturers have all they can do to keep up with demands for entertainment TV. So, manufacturers really have not tried to develop the much smaller industrial market. And expansion is likely to be slow for severals years yet. Thus each industrial installation is custom-tailored to solve a particular problem and prices are fairly high.

• **Who Makes ITV**—So far, only a few companies have put ITV equipment on the market. They are Diamond Power Speciality Corp., Radio Corp. of America, Remington Rand Inc., Allen B. Du Mont Laboratories, Inc., and Wilmot Castle Co.

Biggest producer is Diamond Power. Its Utiliscope basically consists of a camera, a power unit, and a monitor or viewing unit, all hooked up in a closed circuit.

First Utiliscope applications were in power plants. There they watched boiler gages and checked combustion mixtures. Later applications were in materials-flow control for heat-treating furnaces.

RCA recently tested ITV in the Baltimore & Ohio's railroad-yard operation. One camera allowed a clerk to record freight-car numbers without walking among the cars and tracks. Two other cameras gave an over-all view of the classification yard so that the disposition and movement of all cars and switching engines could be watched and coordinated. Other cameras helped inspect passing cars. *Railway Age* magazine reported that the tests showed ITV had worthwhile practical and economical potentialities.

Du Mont's equipment is going mostly to U. S. Government agencies. One of Du Mont's brainchilds is stereoscopic TV. Atomic scientists needed a three-dimensional picture when they handled radioactive material by remote control. Stereoscopic TV was the answer.

Remington Rand's black and white Vericon has found uses in business organizations. Banks have found it a valuable time-saver in comparing signatures. Rem Rand was also instrumental in placing the Columbia Broadcasting System's color TV, Vericolor, in hospitals. CBS color for hospitals is now being distributed by Wilmot Castle Co. Color ITV will be useful in permitting large audiences to watch surgery.

• **What Industry Can Do**—Industrial TV is a newcomer. Process engineers are mostly unfamiliar with its possibilities. And TV equipment makers are only beginning to develop specialists in industrial applications. So it is mostly up to industry to take ITV and find new applications for it. Industry will have to think not so much in terms of initial cost but in terms of potential savings.

Aluminum for Windings Pass Transformer Test

In 1948, the Aluminum Co. of America asked Westinghouse Electric Corp. to make 20 dry-type transformers ranging in size from 3 kva. through 15 kva. There was one distinguishing feature about the transformers. The windings were to be made of aluminum strap.

Westinghouse was interested primarily in getting operating data so it used as many standard transformer parts as possible from existing models having copper windings. Winding the coils was not a problem.

But connecting the aluminum winding to copper terminals was harder. A soldered joint was developed. The copper cable lead was wrapped around the aluminum strap and soldered, using a special soldering flux.

After 3½ years service, one transformer was examined. No trouble of any kind was found. So there is no problem from the service standpoint. The only problems lie in manufacturing technique and equipment. And additional experience with aluminum windings will lick these problems.—Factory, Dec, p136

Better Vanilla Flavor

New flavoring agent, propenyl quaethol, is claimed to be more nearly like vanilla than any other artificial flavoring. It also has the ability to emphasize flavors, such as chocolate, maple, butterscotch, and buttercream, when it is used in combination with them.

Propenyl quaethol can be used in preparing extracts by (1) combining it with vanilla and vanillin to provide a high-quality flavor or (2) replacing part of the vanillin to give a less expensive but more vanilla-like flavor than that of either vanillin or ethyl vanillin.

The chemical can be also prepared as a general-purpose liquid base suitable for dilution with water, or it can be added, in powder form, directly into fats or essential oils.—Food Eng, Jan, p62

Functional "Jewelry" Latest Life Saver

Wristbands and finger rings painted with radium are adding a dash of fashion to U. S. worker's hands.

Style aside, the devices have a serious purpose—protecting press and drill operators from maimed fingers. Coating the bracelets or rings with three times the radium concentration found on the average luminous watch dial and installing new-type Geiger-Mueller tubes on the press control unit makes a 100% fail-safe circuit. When worker's hands pass within range of the Geiger tube, the press is automatically locked from operation. A timer hooked into the system also renders the machine inoperative if wristbands are not on worker's hands.

New halogen-quenched Geiger tubes used in the safety device are a new type recently developed. Tubes are metal and have an unlimited life span.—Electronics, Jan, p114

ASK FOR THIS!

Yours on request . . . a book packed with ideas, examples, and illustrations to help you operate your business more economically and efficiently. RAPISTAN'S complete catalog of materials handling equipment features actual installations of conveyor units, lines and systems in the plants of progressive companies throughout the American continents. The combined experience of hundreds of manufacturers, wholesalers, retailers, growers and shippers is incorporated in helpful suggestions for improved handling methods in *your* operation. The RAPISTAN catalogs offer invaluable aid to anyone concerned with faster, more efficient, more economical movement of goods.

If you want specific answers to your particular problems, tell us the exact nature of your operation. You will then receive actual field reports describing and illustrating conveyor installations which are solving similar problems . . . all at no obligation to you!

Write today to:

The RAPIDS-STANDARD CO., Inc.
97 Rapistan Bldg., Grand Rapids 2, Mich.

Rapistan®
BETTER CONVEYING EQUIPMENT

If you are

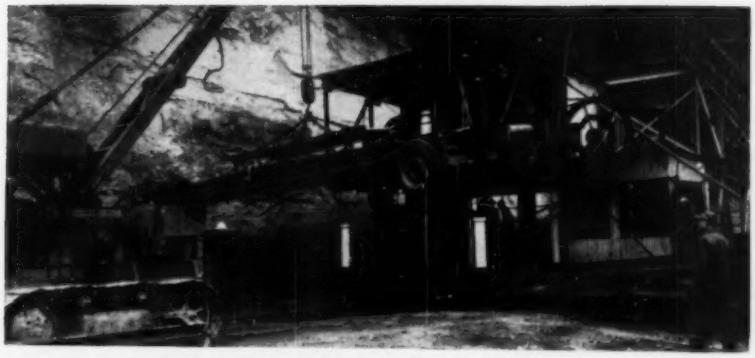
Please notify us of your new address in advance to insure uninterrupted service on your subscription to the McGRAW-HILL DIGEST. Use the convenient change of address form below and mail to:

MANAGER OF CIRCULATION
McGRAW-HILL DIGEST
330 West 42nd Street,
New York 36, N. Y., U. S. A.

Name.....
New Address.....
.....
My Old Address.....
.....
My New Position.....
New Company Name.....
Our Main Business is.....

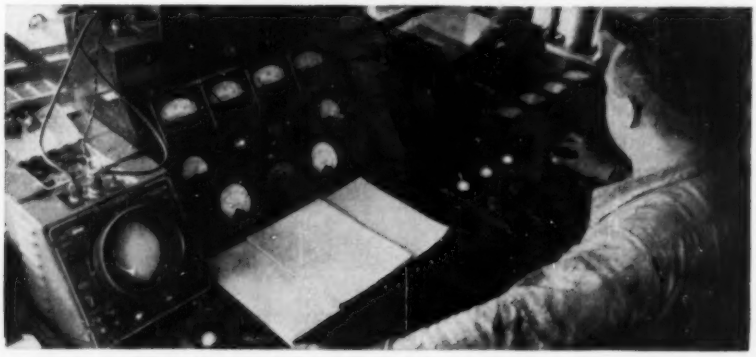
DON'T FORGET TO NOTIFY YOUR POSTMASTER, TOO!

Rig Tracks Coal Seam

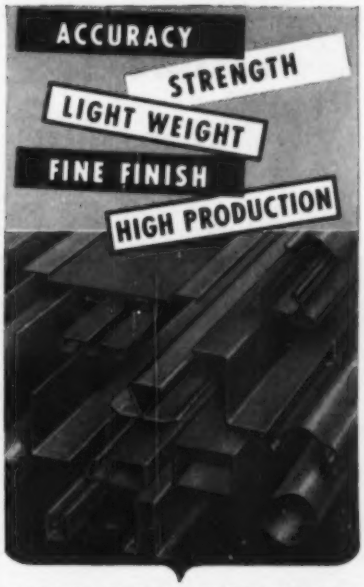


TWO-STORY, PORTABLE RIG is the brains of muscle of new continuous coal-mining machine that (1) opens to economical recovery vast, rich coal lands hitherto too expensive or too difficult to work, (2) promises a 40% cost cutting. Cutting head at bottom level is mounted on power-driven crawler tracks. Behind the cutter is a fixed chain-and-flight conveyor that receives coal from the cutter and carries it to trucks.

CUTTER HEAD on a separate carriage digs into the cliff, follows the coal seam, and is remotely controlled from the second story of the rig. When the cutter has penetrated the seam to one conveyor length, another conveyor section is hooked on. Conveyor empties into truck. Present model penetrates to 700 ft. Plans call for a model that will go 1,000 ft. Carbide & Carbon Chemicals Co. developed the machine.



OSCILLOSCOPE SCREENS in the control room register changes in the hardness of the coal seam, detected by "sensing teeth" on the cutter head. Change in hardness means a change in direction of the coal seam. By watching the screen, the operator can make the cutter follow the wanderings of the seam without a man going underground.—Coal Age, Dec, p72



COLD-ROLL-FORMING

gives you all of these advantages

At lower Cost –

● In busy metal working plants, vigilant production men are constantly on the lookout for places where, due to increased demand for their products, the time is ripe for a change of methods. They know that in the shaping of metals into finished products or components, cold roll forming has many important quality and cost advantages over all other methods.

In some instances it becomes possible, by redesign of the product, to adopt cold roll forming. In others, the mere need for higher production makes the change profitable. Again, redesign often leads to a saving in weight which, in the case of the more expensive metals, alone may amount to much more than the conversion cost.

When such changes are indicated, feel free to avail yourself of the Yoder engineering service in analyzing and determining the practicability of cold roll forming, choice and cost of equipment, and other pertinent questions.

THE YODER COMPANY
5517 Walworth Ave., Cleveland 2, Ohio

Cold-Roll FORMING MACHINES

ENGINEERING YODER MANUFACTURING

Pressure Processing

. . . whoever uses it in their production is a customer or potential customer of **H-P-M**

DIFFICULT SMALL PARTS call for H-P-Ms!

For difficult draws and other forming operations . . . on short as well as long runs . . . Walker Mfg. Company, Ajax Division, finds H-P-M 150 and 200 ton All-Hydraulic Presses ideal.

Starting with one H-P-M, Walker has added three more to keep pace with increased production requirements . . . reflecting real confidence in H-P-M and the presses we build.

If pressure processing is an important part of your production picture . . . it will pay you well to talk shop with an H-P-M engineer. Write today!

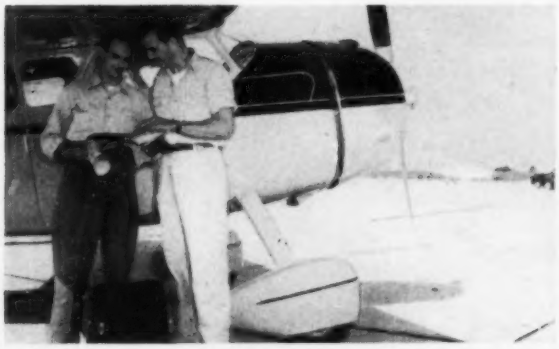
HPM THE HYDRAULIC PRESS MFG. CO.

1086 Marion Road, Mount Gilead, Ohio, U. S. A.

Presses for Every Pressure Processing Application

Flying Eye Sees All, Tells All

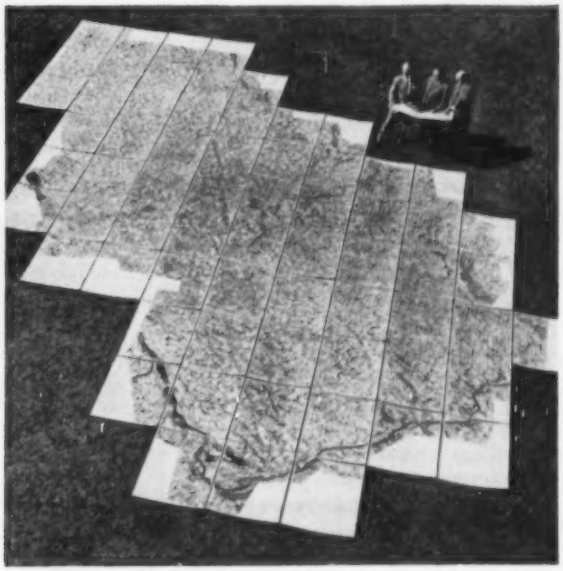
Philadelphia Electric Co. brings its territory maps up to date with a relatively inexpensive aerial survey of Philadelphia and environs



FLIGHT PLAN for the 2,300 sq. mi. area to be surveyed is set by pilot and photographer before morning takeoff.

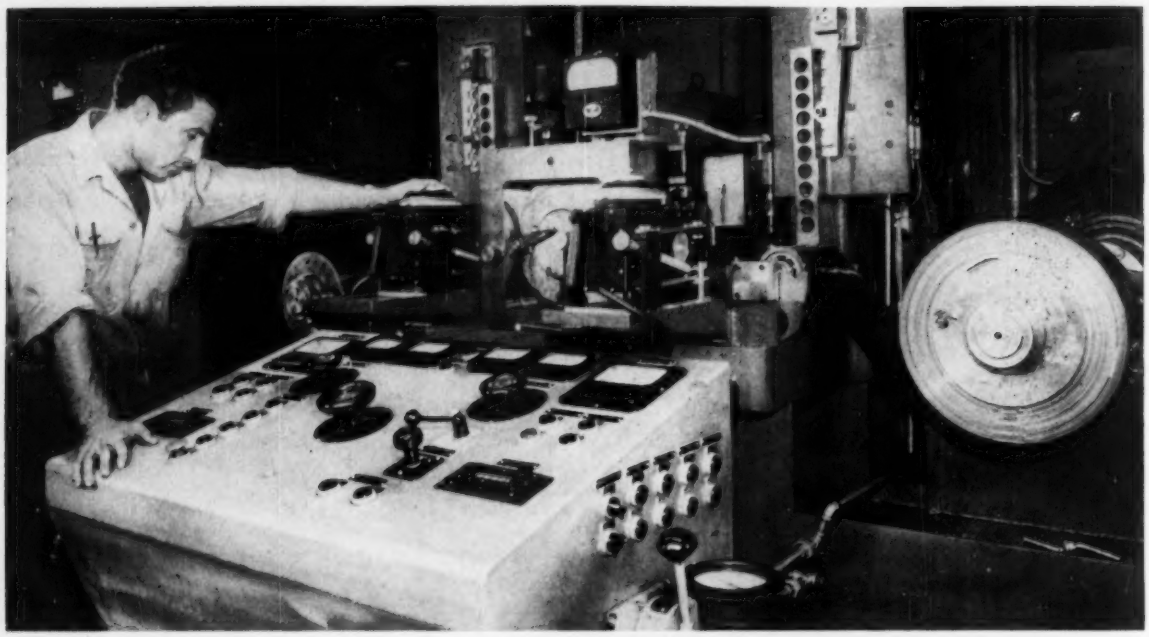
PLASTIC MASTER is photo-copied to make map for field use by operations and planning men.

CARTOGRAPHER goes over all 806 photos taken, corrects for tilt, relates them to ground positions and assembles.



ASSEMBLED aerial map could paper a two-family house, includes every road and rooftop—Elec World, Jan 5, p22

PHOTO-MAP sections are traced by draftsman on clear plastic sheets which serve as masters for later work map.



SENDZIMIR MILL answers the need of electronic and other industries that demand . . .

Rolled Paper-Thin Metals

If you have to make a product smaller or lighter or if you need special magnetic or electrical qualities, take another careful look at ultra-thin metal strip

MINIATURIZATION of components in the electronic, aviation, instrumentation and allied industries has created a demand for metal strip rolled to thin gages and close tolerances.

Metals now available in such form include aluminum alloys, copper-base alloys, ferrous metals, nickel-base alloys, high-temperature metals, molybdenum, tantalum, titanium, zirconium, and precious metals. These metals are rolled up to 8-in. widths, down to 0.0005-in. thicknesses, and to tolerances of ±0.0001 in. on thicknesses below 0.006 in.

Rolling techniques were borrowed from the jewelry industry. The metal strip is produced in five steps:

1. Rolling 1½-in.-thick bars down to 0.075-in.-thick "snakes".
2. Rolling "snake" on two-high mill down to coil 0.020 in. thick and then on four-high mill to 0.002 in.
3. Annealing in controlled-atmosphere furnace.
4. Slitting to tolerances as close as ±0.001 in.
5. Rolling on a Sendzimir mill.

The Sendzimir mill keys the success of the operation. Features include large motors to allow heavy passes at high speeds, ability to handle stock from 3 to 8 in. wide, speed range of 0 to 300 ft. per min., strip tension controlled by tensiometer, and thickness controlled by "magnetic" flying micrometers.

Application of the paper-thin metals is spreading. A recent development has been the construction of small, thin-gage cores for high-frequency magnetic amplifiers. A 3% silicon steel and 79–4 Permalloy rolled to 0.008 in. provide the necessary rapid reversal in magnetism.

Another interesting use is precision-rolled phosphor bronze in ultra-low-torque potentiometers. The phosphor bronze is rolled to 0.0016 in. with a ±0.0001-in. tolerance. The potentiometers, designed as transmitters in indicating-control (servo) circuits, supply torque as low as 0.003 oz.-in. and resistance from 50 to 125,000 ohms. Instruments of this type are needed in servomechanisms, computers, and telemetering devices.

Beryllium copper, rolled to exceptional thinness and tolerances, is used in the diaphragm assembly of manifold pressure gages for the armed services. The gages indicate pressures in aircraft-engine intake manifolds.

Other uses: Ultra-thin metals also are going into fulcrum springs on combination furnace controls and snap switches. Thin-rolled monel is used by a wire-cloth manufacturer to make metal clips on the ends of refrigeration dryers.—Prod Eng, Jan, p138

New Device Prevents Propeller Reversal

A new safeguard against the hazard of inadvertent propeller reversal is now ready for airline service. The new hydraulic device, made by Hamilton Standard Division, United Aircraft Corp., is designed to prevent short-circuits of electrical relays or faulty throttle lock mechanisms, both of which have caused recent serious air accidents in the U. S.

The mechanism is a valve, serving somewhat the same function as the safety valve on a steam engine. It is a low-pressure relief valve in the hydraulic line, which actuates the mechanism that turns the propeller's blades into reverse pitch.

• **How It Works**—To get the additional pressure needed to reverse propeller pitch, the propeller governor must now get two separate signals, one at the new valve and one at the low-pressure valve already in the system. Unless both signals—an arming signal and an actuating signal—register, the valve does not close and, because sufficient pressure cannot build up, the prop cannot reverse. —Aviation Wk, Nov 17, p76

Detergent Sales Gain at Expense of Soap

Detergents are steadily pushing soap consumption in the U. S. downward. For the fifth successive year, detergents have gained and soaps have lost ground. Detergents now rank in sales about equal to soap.

Detergent sales in 1952 rose to about 1.6-billion lb., compared with soap sales of 1.8-billion. This trend, for one thing, has hit the tallow market hard. Present demand for tallow to make soap is less than 70% of 1947's demand. Story is the same for coconut oil.

Prices of both are down. Tallow in 1947 cost up to 26.6¢; now it is 5.4¢. Coconut oil in 1947 had a 26¢ high; present price is half that. Here are other results:

• **Production** of alkyl-aryl sulfonate is booming, along with its constituents, such as benzene.

• **Another increase** is in sodium tripoly phosphate output. Early in 1950, its production was 15,000 tons a month; now it is 38,000 tons.

What can the soap makers do? Most are joining in turning out detergents of their own. As for improving soap, a new "glassy" phosphate with high sequestering power offers hope by helping solve the problem of hard-water rinsing. —Chem Wk, Dec 13, p62

Cotton-Testing Program

Some cotton merchants and mills supplement hand classing of cotton with fiber-testing programs. These tests provide data on staple length, fiber fineness, fiber strength. By using these test data, cotton merchants are able to describe their cotton more accurately to buyers, and mills are able to select cotton that more nearly conforms to standards they set up.

In mills the trend is toward more attention being paid to fiber fineness, as revealed by these tests, than to staple length.—Textile World, Jan, p244

A Plan for Better Lighting Maintenance

To keep your lighting system operating at top efficiency, set up a planned maintenance program. You will find employees work better and you will save money in the long run if you take these steps:

• **Take** light meter reading frequently—do not trust your eyes to tell you when lighting is inadequate.

• **Establish** a replacement schedule—group replacement is better than spotty replacement and it can be done after hours without interrupting workers.

• **Clean** lamps and fixtures regularly—dirt and dust can cut light output 50% in short order. Meter readings will tell you where and when to clean.

• **Keep** stock of spare parts—do not wait for burnouts to buy sockets, lamps, starters, ballasts; keep plenty on hand.

• **Check** voltage regularly.—Elec C&M, Jan, p86

NEW PRODUCTS

Coating Concrete Blocks in Advance Allows Cheap, Effective Construction

The machine above is applying a glazed, plastic-like coating to concrete blocks. The process is called Kem-Krete.

The coating has to be applied by the machine; a brush cannot do the job. After an ordinary concrete block has passed through the machine and a 16-hr. curing process, it acquires a coating that is said to be harder than baked enamel.

The coating is impervious to water, withstands the action of acids or alkalines. It will char under the flame of a blow torch, but it will not burn. The coating is built around Shell Chemical Co.'s Epons, a family of ethoxyline resins.

The formula is a closely guarded secret. It is known to consist of two materials, which are kept in separate containers and mixed in the spray gun.

Coloring—Kem-Krete can be colored before it is applied; later on, it can be easily painted another color. The new blocks can be used wherever special facing materials or repeated finishing is needed on interior walls. In basements and outdoor walls, Kem-Krete masonry has to be waterproofed to keep moisture from seeping through the mortar between blocks.

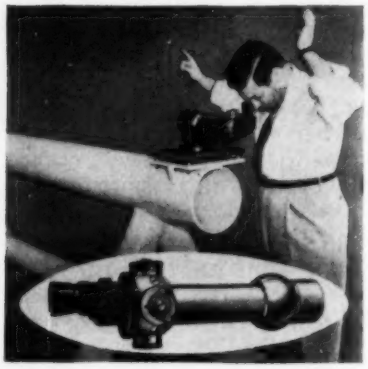
The coating machine will glaze one side of 2,000 regular-size concrete blocks per day. Three men are required for the operation. The machine is designed to work in connection with Besser Mfg. Co.'s concrete-block manufacturing machine.

Costs—The coated blocks will cost about 40% less than ceramic material used for finished wall surface, and about 40% more than conventional concrete block. The coating material will run about $15 per gal. Conventional-type mortar is used in laying up the blocks.—**Sherwin-Williams Co.**—Business Wk, Jan 10, p54

Small Generating Plant

New 3,500-watt a-c electric generating plant is conservatively rated at a 4,000-watt peak overload capacity for periods of up to 2 hr. Model 305CK is designed to meet demand for higher capacity in small-sized portable electric plants.

A two-cylinder, four-cycle air-cooled gasoline engine powers the plant. Voltage regulation is plus or minus 3%. Either manual or remote starting models are available from the manufacturer.—**D. W. Onan & Sons, Inc.**—Am Builder, Dec, p144



Optical Tooling Aid

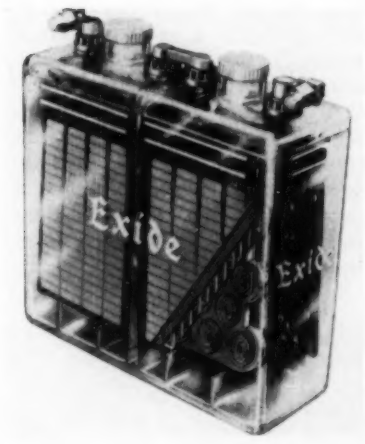
This Align-A-Scope unit for tooling and aligning by telescope permits faster, more accurate alignment in aviation and large rotating-machinery industries, where exacting tolerances are required.

High-powered telescopes have magnifying eyepieces designed to be used either parallel or at right angles to the line of sight, and can be rotated 360°. Built-in optical micrometer can displace the line of sight either vertically or horizontally.

Operating dials control and indicate this displacement within 0.050 in. Device weighs only 18 lb. Auto-collimators and other accessories like targets, bases, mounts are available—**Joel Fox Co., Inc.**—Power, Jan, p180

Precision Tool Grinder

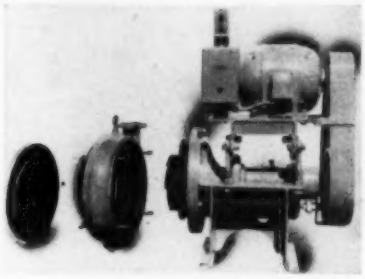
Style 44-A tool grinder with 6-in-cup wheel sharpens boring, turning, and facing tools up to ⅝-in. square. Tool-rest tables are adjustable to angle required—as shown in degrees. Coolant tank is located in base of machine. Double-end model has reversible motor to grind left-hand or right-hand tools on the same wheel.—**Ex-Cell-O Corp.**—Am Mach, Jan 5, p166



Batteries in Plastic

Greater economies from lower initial cost, increased efficiency, and long trouble-free life are among the advantages cited for the new Type CME series of Exide-Manchex batteries. They are available in both 2- and 3-cell units built to meet service demands of stationary small power applications.

The CME line features reduced weight per ampere-hour output, smaller size, higher watt output per unit of space, highly sustained useful voltage, and greater damage resistance.—**Electric Storage Battery Co.**—Coal Age, Dec, p116



Rubber-Lined Solids Pump

New series of solids- and acid-handling pumps are available in rubber-lined and all metal types in sizes 2 in., 3 in., 4 in., 6 in., and 8 in. with capacity ranges up to 3,000 gal. per min.

These pumps operate on the patented "vacuum-seal" principle that prevents fluids or the entrained solids from being forced into the gland. The impeller is a disk with pumping vanes on one side and smaller auxiliary vanes of greater diameter on the reverse side next to the gland. These auxiliary vanes produce a vacuum on the shaft seal and prevent solids from cutting the shaft or packing.

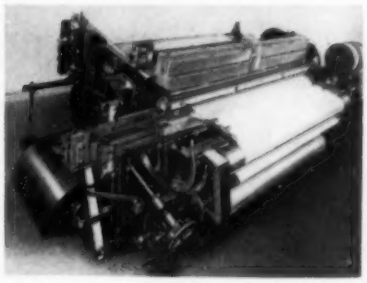
The pumps are designed for construction and cement industries.—**Galigher Co.**—Eng. News-Rec, Dec 18, p124

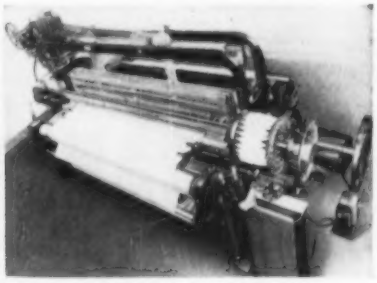
One Unit Washer-Dryer

Bendix Duomatic combines washer and dryer in one unit. Complete cycle—washing, rinsing, damp drying, and fluff drying—takes place in the same horizontal cylinder that revolves inside tub, employing tumbling action. Entire operation, wash and dry, takes 68 min.

A 220-volt "Magic Heater," controlled by water-temperature selector, can raise water temperature as much as 25°; an automatic speed soak cycle is optional; three rinses follow wash cycle, then the load is spin-dried.

Blower goes into action during the drying cycle. Dehumidifier cools and drys air leaving cylinder, washes lint down drain. No lint trap is necessary—**Bendix Home Appliances Div., Avco Mfg. Co.**—Elec Merch, Jan, p311





Two New Looms Mix Filling

Two new looms that will weave 75% of all styles of worsted, woolen, and blended fabrics have been announced. The looms contain the smallest possible number of moving parts and are built rugged enough in the frames and driving parts to weave any conventional worsted- or synthetic-type fabric. The manufacturer says that because of the high speed and low maintenance costs, these two looms weave conventional fabrics more economically than any other loom they have built.—Crompton & Knowles Loom Works—Textile World, Jan, p145

June 1-12, 1953

...best time to take a trip to Canada

Exhibitor space bookings indicate that the 1953 Canadian International Trade Fair will offer buyers greater opportunities than in any previous year.

The C.I.T.F. is internationally recognized as a fruitful source of new ideas, new products, new contacts and new customers. Make it YOUR business headquarters for the North American Continent, in June 1953.

Come and see for yourself the wealth of opportunities for business with Canada and with other countries.

IMPORTANT—write now for room reservations to: The Administrator, Canadian International Trade Fair, Exhibition Park, Toronto 2-B, Ontario, Canada.

1953

CANADIAN INTERNATIONAL TRADE FAIR

TORONTO, CANADA, JUNE 1-12, 1953

OPERATED BY THE GOVERNMENT OF CANADA TO PROMOTE YOUR BUSINESS

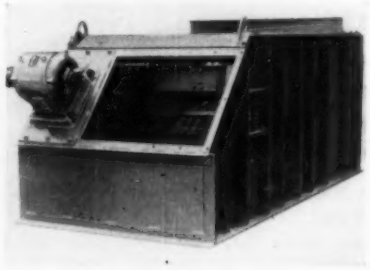
For Close Quarters

You can operate the Stoway electric stand-up fork truck within its own radius. It is especially useful on jobs where the operator must frequently mount and dismount.

Capacities are 2,000 lb. at 24 in., 2,500 lb. at 15 in., and 1,650 lb. at 30 in. Heights range from 72 to 132 in. Carriage tilts 4° forward, 14° backward.—**Clark Equipment Co.**—Factory, Jan. p166

Desk-Top Copying Machine

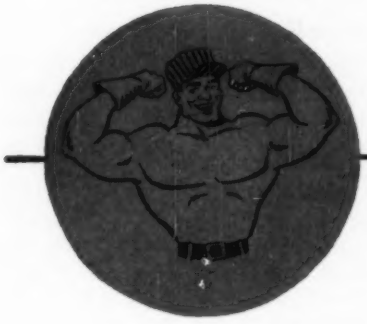
Ozamatic copying machine is especially useful in small offices where space is important. Despite its small size, the machine handles a large volume of copy work. It easily produces a master from a master. By this device you can add variable information to a constant form or delete confidential material, and make copies of just the information you want to circulate. Copies can be made in less than a minute each.—**Ozalid Div., General Aniline & Film Corp.**—Am Business, Dec, p50



Vibrating Grizzly

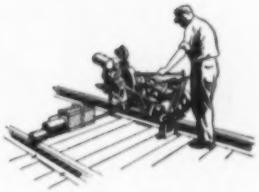
New Symons grizzly will scalp 400 tons per hr. of wet, dry or sticky ore. Separations range from ½ in. to about 4 in. Heavy-duty K-RG grizzly has 50-in. by 8-ft. screening surface.—Nordberg Mfg. Co.—Eng & Min J, Jan, p123

Use these dependable NORDBERG "Mechanical Muscles"

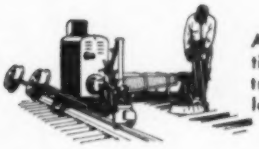


to do a Better, Faster Job of Railway Maintenance at Lower Cost

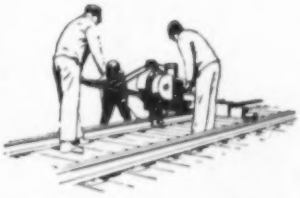
SPIKE PULLER . . . By getting spikes out faster this machine speeds up relaying and reduces the cost of the entire operation.



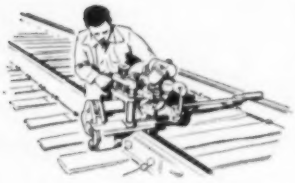
TRACK WRENCH . . . Provides uniformly controlled tightening on track bolts to prolong rail life and make better riding track.



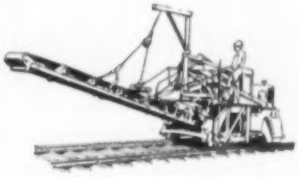
ADZING MACHINE . . . Provides tie seats in keeping with today's track maintenance standards. All level and in same plane.



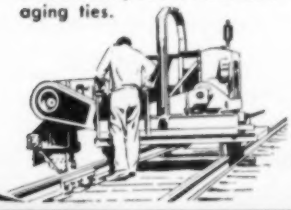
SPIKE HAMMER . . . All spikes driven straight and at big savings in time and money.



RAIL DRILL . . . A compact, lightweight, low-cost, easily set drill that is a money saver.



DSL YARD CLEANER . . . Cleans more track faster, better, more economically . . . without damaging ties.

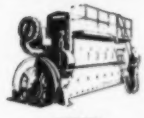


CRIBEX* . . . Removes material contained in the cribs and deposits it beyond the ends of the ties.

*Registered Trade Mark

USE THESE DEPENDABLE NORDBERG PRODUCTS

SYMONS* PRIMARY CRUSHERS



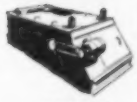
DIESEL ENGINES

GRINDING MILLS

MINE HOISTS

RAILWAY MAINTENANCE MACHINERY

SYMONS VIBRATING BAR GRIZZLIES



SYMONS* VIBRATING SCREENS

NORDBERG MFG. CO., Milwaukee, Wisconsin, U.S.A. CABLE ADDRESS: NORDBERG

XR252

NORDBERG THE WORLD OVER

LONDON
19 Curzon St., W. 1.

PARIS
8, rue du Boccador

JOHANNESBURG
P.O. Box 4139

MEXICO, D.F.
Dolores 3

Dealers in Principal Trading Areas Throughout the World

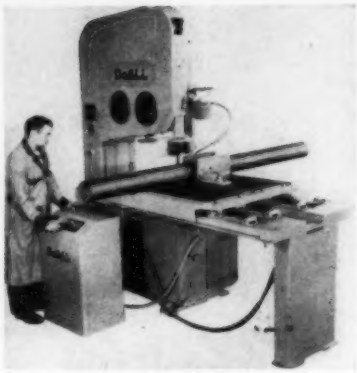
it's even got a memory!

THE REMINGTON RAND PRINTING CALCULATOR

actually "remembers" any figure you choose . . . and re-enters it into your calculations as often as necessary! A light tap on the Constant Key is all it takes to summon this figure and put it back to work! Simplified 10-key keyboard . . . all-automatic operation . . . adds, subtracts, multiplies and divides with lightning speed! Provides *complete printed proof,* to safety-check every factor in every calculation. An especially ingenious feature permits computation *beyond* the limit of the machine's 10 columns! Contact your local Remington Rand office for full details or a demonstration . . . *today!* Offices in all principal cities of the world.

Remington Rand INC

International Division, Room 9361, 315 Fourth Avenue, New York, U.S.A.



Band Sawing Machine Handles Heavy Work

Large-capacity machine, model CO-36, has wide speed range and is designed for rapid, heavy-duty cutoff work. It cuts ferrous or nonferrous metals and all shapes.

Saw blade is twisted 90° from conventional position at the worktable so the work feeds to the blade from the front of the machine. Machine can handle 15½-in. work thickness under the saw guides and 9½-in. thickness at the column. Worktable, 40x48 in., is hydraulically powered.—**DoAll Co.**—Iron Age, Dec 25, p54

Flame Detector

Detector is designed to safeguard against flame failure. Single element is a photoconductive cell responsive to infrared of any flame. Device operates through electric controls.—Combustion Control Corp.—Elec World, Dec 15, p156

NEW PRODUCT BRIEFS

New in Typewriters—Dual-Rite electric typewriter switches from normal to much heavier lettering with a touch of the ribbon control. This means that emphasis is possible without underscoring. —**Remington Rand Inc.**—Business Wk, Jan 10, p58

Optics in Industry—Stereomicroscope, recommended for production, inspection, and quality control, provides wide field of view, long working distance, and three-dimensional qualities. Wide range of field objectives and adjustable eyepieces is available.—**Bauch & Lomb Optical Co.**—Paper, Dec, p1152

Cleans Lines—Purifier removes almost 100% of dirt, oil, other impurities from steam, air, gas and vapor lines. Stationary centrifugal element throws all solids and water outward to purifier walls. Here it passes to a drain. Sizes are up to 24 in.—**V. D. Anderson Co.**—Prod Eng, Dec, p220

Versatile Battery Telephone—New "all-in-one" telephone, usable either on wall or desk, is designed to fit any application with a minimum of modifications. The phone is a universal local-battery telephone that can be converted to a manual common-battery phone without adding either electrical or mechanical parts.—**Connecticut Telephone & Electric Corp.**—Coal Age, Jan, p132

New Hardboard Product—Presdply is a special panel with faces of Presdwood (hardboard) sandwiching a plywood core. Surfaces can be treated with most types of paints. The plywood core permits handling with all types of woodworking tools and methods.—**Masonite Corp.**—Eng News-Rec, Dec 25, p78

READER SERVICE

As a special service to our subscribers, McGraw-Hill Digest will furnish without any charge additional information about any new product or technical development described. Address your letter to: The Editor, McGraw-Hill Digest, 330 West 42nd St., New York 36, N. Y., U. S. A.

World Famous For Precision and Flexibility

EX-CELL-O

PRECISION BORING MACHINES

Typical of the machine tools that have made the Ex-Cell-O name famous are its machines for precision boring, turning and facing. The Ex-Cell-O Style 1212-A Machine shown handles small and medium size parts and can be tooled for small or large volume work. One or more precision spindles can be arranged on each machine bridge. Controls of the hydraulically operated machine table are easily adjusted for an automatic cycle which may include rapid movement, two infinitely adjustable feed rates in both directions of travel, immediate or dwell reverse and stop.

This and many other Ex-Cell-O products are fully described in Catalog 27312. Use the coupon below to get your copy.

53-12

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN, U.S.A. • CABLE ADDRESS: XLO, DETROIT, U.S.A.

PRECISION MACHINE TOOLS • CUTTING TOOLS • MACHINES TO PACKAGE MILK IN SANITARY PAPER CONTAINERS

EX-CELL-O CORPORATION Detroit 32, Michigan, U.S.A.

Please send without obligation copy of Ex-Cell-O General Catalog No. 27312.

Name_____

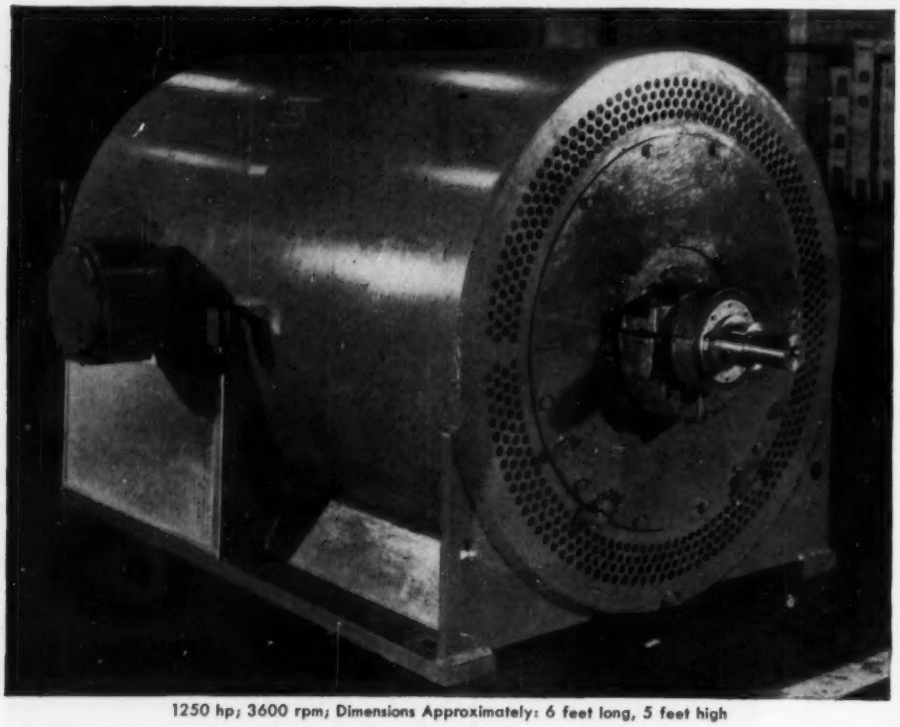
Company_____

Address_____

City and Country_____

ALLIS-CHALMERS

SERVING ALL INDUSTRY FOR MORE THAN A CENTURY



1250 hp; 3600 rpm; Dimensions Approximately: 6 feet long, 5 feet high

Self-Cleaning Motor

Reduces Maintenance Costs

MOTOR CLEANING is practically eliminated with the Allis-Chalmers tube-type, totally-enclosed, fan-cooled motor. Even when it is mounted outdoors, dirt cannot harm it.

The tube-type cooling system accounts for this saving. Outside cooling air passes through a nest of tubes surrounding the stator and removes heat from the interior of the motor. Since these tubes are straight, air flowing through them carries dirt right out to the atmosphere. There are no corners or pockets where dirt might collect. If the tubes ever need cleaning, a brush on a long handle does it fast.

Sizes range from 75 hp up. Special cooling system tubes can be provided for resisting corrosion. For complete information, contact the Allis-Chalmers representative in your country or write:

ALLIS-CHALMERS MANUFACTURING COMPANY
General Machinery Division
Export Department, Milwaukee 1, Wisconsin, U. S. A.

ALLIS-CHALMERS DISTRIBUTORS THROUGHOUT THE WORLD

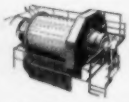
ALGERIA—Alger.
ARGENTINA—Buenos Aires.
AUSTRALIA—Sydney.
AUSTRIA—Vienna.
BELGIUM—Brussels.
BOLIVIA—La Paz.
BRAZIL—Rio de Janeiro, Sao Paulo, Recife (Pernambuco), Porto Alegre.
BRITISH BORNEO—Sandakan.
CANADA—Montreal.
CHILE—Santiago.
COLOMBIA—Barranquilla, Bogota, Medellin, Cali.
COSTA RICA—San José.
CUBA—Havana.
DENMARK—Copenhagen.
DOMINICAN REPUBLIC—Ciudad Trujillo.
EL SALVADOR—San Salvador.
ENGLAND—London.
FINLAND—Helsinki.
FRANCE—Paris.
FRENCH MOROCCO—Casablanca.
GREECE—Athens.
GUATEMALA—Guatemala City.
HAITI—Port-au-Prince.
HAWAII—Honolulu, Hilo.
ICELAND—Reykjavik.
INDIA—Bombay.
IRAQ—Baghdad.
ISRAEL—Tel-Aviv.
ITALY—Milan.
MALAYA—Kuala Lumpur, Ipoh, Kota Bharu, Penang.
MEXICO—Guadalajara, Mexico City, Monterrey, Tijuana.
NETHERLANDS—Amsterdam, The Hague.
NEW ZEALAND—Wellington.
NICARAGUA—Managua.
NORWAY—Oslo.
PANAMA—Panama.
PERU—Lima.
PORTUGAL—Lisbon.
PUERTO RICO—Ponce, San Juan.
REPUBLIC OF THE PHILIPPINES—Manila.
SARAWAK—Kuching.
SINGAPORE—Singapore.
SPAIN—Madrid.
SURINAM—Paramaribo, Nieuw-Nickerie.
SWEDEN—Stockholm.
SWITZERLAND—Zurich.
THAILAND—Bangkok.
TUNISIA—Tunis.
TURKEY—Istanbul.
UNION OF SOUTH AFRICA—Johannesburg.
REPUBLIC OF INDONESIA—Djakarta, Surabaja.
URUGUAY—Montevideo.
VENEZUELA—Caracas.

Texrope is an Allis-Chalmers Trademark

★ ★ BASIC MACHINERY FOR THE WORLD'S MAJOR INDUSTRIES ★ ★

Electric Power Generation and Transmission

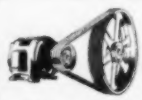
Steam and Hydraulic Turbines, Condensers



Equipment for Ore and Rock Processing

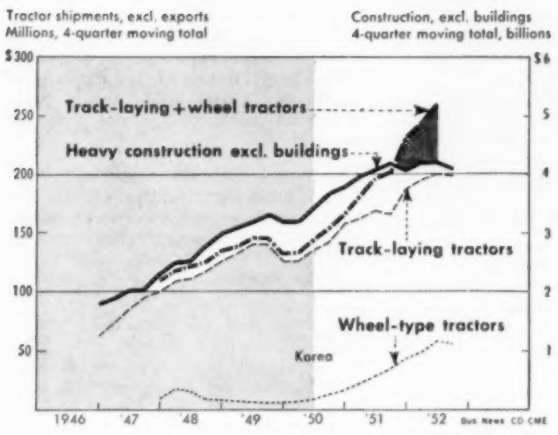
Centrifugal Pumps, Motors and Control

Complete Machinery for Cement Making



Texrope V-Belt Drives and Motors

MANAGEMENT REPORT



The chart shows how crawler and wheel tractors compare with contract awards. Notice how tractor shipments seem to follow construction awards fairly close up to mid-year 1951. Then apparently when tractor production stepped up in an effort to make up for demand, shipments shot upwards in relation to contracts, but still held close to the up-and-down pattern.

Charts are based on U. S. domestic shipments only. But a similar chart might prove useful in estimating construction-equipment needs on the basis of contract awards for your country.—Const Meth & Equip, Jan, p16

Cigarette consumption is at a record high throughout the world as well as in the U. S. A United Nations study ascribes the worldwide postwar boom to these factors:

- Smoking by women, which has increased particularly in Northern Europe.
- A large scale change to cigarettes by pipe and cigar smokers.—Business Wk, Jan 3, p47

U.S. steel industry's outlook for 1953 is bright indeed. It can produce as much as 118.8-million net tons—if needed. Supply is expected to match demand for a number of finished steel items by mid-year or soon after. These items will then be more quickly available to overseas buyers. But some items will stay hard to get throughout the year—large bars, heavy plates, and structurals.—Iron Age, Jan 1, p493

The French have words for it. The words are "Cinquante Ans de Perfectionnement Technique". That's a book, 378 pages, on technological progress in various industries. Specialists write on electrochemistry, organics, explosives, plastics, perfume, glass, and other such fields. You can buy it for 4.120 fr. from Centre de Perfectionnement Technique, 28, Rue Saint-Dominique, Paris 7, France.—Chem Eng, Jan, p318

From Australia comes this interesting insight on the relation of even a small dose of unemployment to attitudes toward output where the economy is tightly controlled.

One to two percent unemployment resulted in a 30% increase in labor productivity according to an Australian study. During a recent period of full employment, when manpower was hard to find, Australian productivity was notoriously low. Now, with slight unemployment, production is way up.—Factory, Jan, p136

The gold price is still anyone's guess. European factors favor a higher price as an easy way out of current financial problems. U.S. experts, and some abroad, stick to the belief that a higher price will only hide the illness now, not cure it.

It looks like the U.S. Congress and Eisenhower's administration favor letting the present gold price hold its $35-an-ounce level.—E & M J Met and Min Mark, Jan 8, p7

Honor system replaces clock at Du Pont's Electro-Chemical division plant. About 1,800 employees file their own time slips at the end of each week, reporting to management the number of hours they have worked. The plant manager calls it "the substitution of freedom of action and individualism in place of regimentation."—Am Business, Dec, p45

Top management men should take a close look at plastics when they set policy on product-design objectives. A new full-sized automobile will be built in Denmark with a laminated polyester plastic body and floor.

Main reason for use of plastic is the reduced investment involved. Presses, dies, and tools to make steel bodies would cost $300,000. The plastic bodies will require an investment of only $25,000.—Prod Eng, Jan, p200

Chaotic practices in drafting rooms of Great Britain, U.S., and Canada are hurting NATO rearmament effort. That is what W. L. Batt told a recent meeting of the American Standards Association. He recommended that management let engineers take steps to clear up the confusion by standardizing practices in the three countries.—Eng & Min J, Jan, p127

PRODUCTION IDEAS

from Manufacturers' Catalogs

3-1 Broaching—Colonial Broach Co. 8p. "Colonial Broaching News"—Vol. XIV, No. 3—describes (1) crush-grinding techniques for producing broaches and (2) a transfer machine line.

3-2 Materials Handling—Clark Equipment Co. 20p. Vol. 10, No. 2 of Material Handling News illustrates the use of industrial lift trucks in receiving, storing, processing and assembly, warehousing, and shipping.

3-3 Flow Indicators — Schutte & Koerting Co. 12p. Construction, operating pressure and temperature, pressure drop, installation, operation, application, and specifications of flow indicators are covered in bulletin 18-W.

3-4 Food Preservation — Monsanto Chemical Co. 10p. Book gives instructions for the use of benzoic acid and sodium benzoate in preserving food products. It also explains the causes of spoilage and how benzoic acid and its soluble salt prevent it.

3-5 Monotube Dryer—Link-Belt Co. 8p. Bulletin 2413 describes the Monotube dryer, field of application, results accomplished in actual installations, together with photographs, drawings, and dimensional data.

3-6 Textile Industry — Westinghouse Electric International Co. 67p. Booklet B-5422 covers the application of both motors and controls in the textile industry. Booklet B-4799 covers electrical equipment for textile mills.

3-7 Pyrometric Switches—Minneapolis-Honeywell Regulator Co. 12p. Catalog 5800 illustrates and describes rotary, key and plug type pyrometric switches. Applications and pertinent circuits are given.

3-8 pH Control—Foxboro Co. 16p. A review of pH theory and its practical applications in industrial measurement and control are contained in bulletin 430-1. It explains, step-by-step, the units employed in the pH control cycle.

3-9 Highway Trucks — International Harvester Export Co. 20p. Three models of the L-160 series are covered in catalog E-53-B. It includes data on "Comfo-Vision Cab," engine, chassis, axles, spring, and brakes.

3-10 Metalworking Equipment—Bullard Co. 12p. Catalog describes the Cut Master and Man-Au-Trol vertical turret lathes, Mult-Au-Matics, Man-Au-Trol horizontal lathe, Contin-U-Matic, and spacers.

3-11 Ventilation — American Blower Corp. 44p. Engineering data on utility sets for roof installations, industrial application, schools, public buildings, hospitals, and laboratories are given in bulletin 2814.

3-12 Industrial Chemicals—Tennessee Eastman Co. 34p. 1953 catalog of industrial chemicals contains specifications, properties, and typical use of 54 chemicals and lists various fields in which each compound finds its greatest use.

3-13 Diesel Engines—Nordberg Mfg. Co. 24p. Bulletins 208 through 219 give complete engine specifications, equipment data, and outline drawings of Type 4FS one-, two-, and three-cylinder engines.

3-14 Industrial Lighting Standards—RLM Standards Institute. 44p. RLM Specifications Book contains detailed specifications for 18 of the most commonly-employed incandescent and fluorescent industrial lighting units.

3-15 Mobile Machine Shop—Cemco Industries, Inc. 12p. Foldout MMS-1, 10M-552 illustrates the three types of mobile machine shops offered and the equipment contained in each.

3-16 Insulation — Pittsburgh Corning Corp. 36p. A. I. A. File No. 37-B describes the advantages, applications of Fiberglas as insulation in industrial, commercial and public buildings.

3-17 Small Trench Digger—Cleveland Trencher Co. 8p. Model 95 trencher is completely described in bulletin S-112. It contains dimensions, specifications, and tables of optional trench widths and digging-wheel and traction-speed combinations.

3-18 Baltimore — Baltimore Association of Commerce. 18p. "Report to the Industrialist from the Baltimore Area" discusses its position and advantages in the U. S. eastern market.

3-19 Sheet-metal Work—Niagara Machine & Tool Works. 34p. Pocket-size booklet 200-H covers machines and tools for light-gage sheet metal.

3-20 Rubber—B. F. Goodrich Chemical Co. 14p. Catalog on Hycar American Rubber, the oil-resistant member of the rubber family, shows its typical applications and versatility.

3-21 Locomotives — Fate-Root-Heath Co. 6p. Foldout deals with Plymouth hydraulic torque-converter locomotives, 25-, 30-, 35- and 40-ton models, M or W series, gasoline- or diesel-operated. It lists specifications and operating features.

For Free Catalogs, Mail This Coupon Before May 1, 1953

McGraw-Hill Digest (March 1953)
330 W. 42nd St., New York 36, N. Y., U. S. A.

I have filled in the squares with catalog numbers desired.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Name.....Title.....

Company.....

Street.....

City.....Country.....

3-22 Operating Lift Trucks—Hyster Co. 24p. A cartoon-style manual "How to Operate A Lift Truck" illustrates just that. It contains many practical suggestions for safe, skillful use of fork lift trucks in the plant or warehouse.

3-23 Engraving Machines — George Gorton Machine Co. 20p. Tracer-controlled pantograph engraving machines for general engraving, profiling, and die, hob and mold milling are detailed in catalog 1580-F.

3-24 Tin—Malayan Tin Bureau. 20p. The plentiful supply of tin in Malaya and the vital role tin plays in the Free World are the themes of booklet on Malayan tin.

3-25 Tool Bits—Whitman & Barnes. 8p. Specifications and prices of carbide-tipped and high-speed-steel tool bits are listed in catalog 251052.

3-26 Engine Lathes—Cincinnati Lathe & Tool Co. 12p. Installation, operation, and lubrication of Model LT engine lathes in 16-, 18-, 20- and 24-in. sizes are covered in Cincinnati's new publication S-103.

3-27 Aviation-fuel Handling—Bowser, Inc. 32p. Bulletin lists equipment for the three basic types of aviation-fuel handling systems—the positive displacement, submerged pump, and flooded suction types.

3-28 Combating Rust—E. F. Houghton & Co. 72p. "Combating Rust" has four sections on corrosion—causes and prevention; cleaning; preservation; and the use of Houghton rust preservatives.

3-29 Lighting Equipment — Benjamin Electric Mfg. Co. 56p. Bulletin 1e has illustrations and specifications of many types of lighting equipment for industry and commerce. One section is devoted to incandescent, and the other to fluorescent.

3-30 Copper Alloys—American Brass Co. 28p. "Copper & Copper Alloy Specifications Index" has section on commonly used alloys. Section II lists specifications with description of the material as to alloy, grade, type, temper, anneal.

3-31 Corrosion-proof Cements—Atlas Mineral Products Co. 12p. Bulletin 5-2 describes the four standard Atlas cements and the applications of each. It gives data for choosing the proper cement.

3-32 Broaches—American Broach & Machine Co. 34p. Section I of catalog 450 covers internal broaches, surface broaches, broach pullers, keyway broaching, and resharpening and care of broaches. Section II covers broaching machines, plus internal- and surface-broaching operations.

There's new magic in Arabian Deserts...

DeWalt Power Saws, with the magic of Aladdin's Lamp, are speeding the development of desert cities in Saudi Arabia.

In Dhahran, Abqaiq and Ras Tanura, the Arabian American Oil Company has constructed modern housing for over 23,000 persons in a continuing program to provide better living conditions for its employees and their families.

In Saudi Arabia and in every part of the world, DeWalt Saws are playing a vital role in the building of vast housing developments, dams and bridges, highways, public works and many other kinds of construction projects.

Whatever the job, DeWalt Saws are first in performance and rugged dependability. Their safety, precision and versatility make possible gang cutting of building materials with unmatched speed and economy.

One DeWalt will do the work of many machines. A simple change of the cutting tool gives you a new machine – with unlimited uses in cutting wood, metal and plastics.

Amf DEWALT POWER SAWS

AMERICAN MACHINE & FOUNDRY COMPANY
485 Fifth Avenue, New York 17, N. Y., U.S.A.

Send coupon for free descriptive literature

AMERICAN MACHINE & FOUNDRY COMPANY
485 Fifth Avenue, New York 17, N. Y., U.S.A.

Please send me literature and name of my local DeWalt distributor.

Name .....
Company .....
Address .....
City ..... Country .....

Tops in Metalworking

The American Machinist, now in its 76th year, is published every other week for more than 30,000 production executives throughout the metalworking industries. Possessor of a name long famous in American industry, it actually belies its name because it is not exclusively a machine-tool or machine-shop magazine.

Editorially, the American Machinist concerns itself with all the manufacturing processes in making products of metals, plastics, and associated materials. Metalworking management—the men who supervise or direct these manufacturing operations—looks to the American Machinist for what it needs to know.

The American Machinist's interest in metals begins with the fabricator who processes into end products the steel that he receives from the mill and the castings he receives from the foundry. It is not a metal-producing magazine.

Its editors, a capable group headed by Burnham Finney, are not arm-chair or ivory-tower editors. Instead, they are constantly traveling around the U.S. and ferreting out for their readers, and through the Digest to you, the newest and best in metalworking methods — machining, tooling, forming, forging, welding, heat-treating, inspection, finishing, assembly, materials handling.

Burnham Finney
Editor, American Machinist

They are alert to get all the metalworking news—the news in that vast segment of American industry that, bigger than any other, comprises more than one-third of all industry. Metalworking plants in the U.S. produce tens of billions of dollars worth of consumer and durable goods every year. They also make the planes and tanks and guns needed to defend the free world. Keeping abreast of the fast-moving developments in this huge metalworking industry is the American Machinist's job.

ADVERTISERS IN THIS ISSUE

ALLIS-CHALMERS MANUFACTURING CO., General Machinery Div.	48	INTERNATIONAL HARVESTER EXPORT CO.	11
ALLIS-CHALMERS MANUFACTURING CO., Tractor Div.	1	LINK-BELT CO.	2, 3
AMERICAN CYANAMID CO.	8	McGRAW-HILL DIGEST	10
AMERICAN MACHINE & FOUNDRY CO.	51	NORDBERG MANUFACTURING CO.	45
ANDERSON CO., V. D.	4	RAPIDS-STANDARD CO., INC.	36
BERLINER & STAFF, J. J.	29	REMINGTON RAND INC.	46
BURROUGHS ADDING MACHINE CO.	6	REPUBLIC STEEL CORP.	12
GOVERNMENT OF CANADA	44	RIEHLE TESTING MACHINES	29
CLARK EQUIPMENT CO.	23	RUSSELL, BURDALL & WARD BOLT AND NUT CO.	5
DOW CHEMICAL INT'L LTD.	2nd Cover	SERVEL, INC., International Div.	20
EX-CELL-O CORPORATION	47	SYLVANIA ELECTRIC PRODUCTS, INC., International Div.	29
FOOD MACHINERY & CHEMICAL CORP.	4th Cover	UNDERWOOD CORP.	41
GENERAL ANILINE & FILM CORP.	17	WALLACE & TIERNAN CO. INC.	26
HITACHI, LTD.	32	WESTINGHOUSE ELECTRIC INT'L CO.	3rd Cover
HYDRAULIC PRESS MFG. CO.	38	YODER CO.	37

Publications Digested:

McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y.

American Machinist
Aviation Week
Bus Transportation
Business Week
Chemical Engineering
Chemical Week
Coal Age
Construction Methods & Equipment
Electrical Construction & Maintenance
Electrical Merchandising
Electrical West
Electrical Wholesaling
Electrical World
Electronics
Engineering & Mining Journal
E&MJ Metal & Mineral Markets
Engineering News-Record
Factory Management & Maintenance
Fleet Owner
Food Engineering
Industrial Distribution
Machinist (London Office)
Nucleonics
Pharmacy International
Power
Product Engineering
Textile World
The American Automobile (Overseas Edition)
The Welding Engineer

Chilton Company, Chestnut and 56th St., Philadelphia 39, Pa.

Automotive Industries
Boot & Shoe Recorder
Commercial Car Journal
Department Store Economist
Distribution Age
Hardware Age
Hardware World
Motor Age
The Iron Age
The Jeweler's Circular Keystone
The Optical Journal & Review of Optometry

Dartnell Publications, Inc., 4660 Ravenswood Ave., Chicago 40, Ill.

American Business

Fritz Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill.

The Paper Industry

Industrial Publications, Inc., 5 South Wabash Ave., Chicago 3, Ill.

Ceramic Industry

Modern Packaging Corp., 575 Madison Ave., New York 22, N. Y.

Modern Packaging

Modern Plastics, Inc., 575 Madison Ave., New York 22, N. Y.

Modern Plastics

Petroleum Publishing Co., 211 S. Cheyenne Ave., Tulsa 1, Okla.

The Oil and Gas Journal

Simmons-Boardman Publishing Corp., 30 Church St., New York 17, N. Y.

American Builder
Marine Engineering & Shipping Review
Railway Age
Railway Engineering & Maintenance
Locomotive and Cars
Railway Signalling & Communications

McGraw-Hill World News Bureaus: *London, Paris, Frankfurt, Tokyo, Bombay, Melbourne, Mexico City, Rio de Janeiro, Stockholm and 60 other industrial cities*

CSP DISTRIBUTION TRANSFORMERS

cut costs three ways!

In rural areas where lightning hazards are greatest, and in communities where people are adding new electrical equipment with increased overload danger, Westinghouse CSP Transformers are the most efficient and economical you can install.

Here's how these Completely Self-Protecting units cut costs:

1. No separately mounted lightning arresters, fuses, cutouts or extra crossarms are required, *cutting your installed cost.*

2. CSP Transformers eliminate replacement costs of fuses and cutouts, eliminate burnouts and make load surveys unnecessary, *reducing maintenance* overhead.

3. Lower installation costs mean less investment. You pay less interest on the investment, with *lower depreciation* over the long term.

Continuity of service is assured when you install CSP Transformers, which have all protective equipment built in. A red signal lamp warns of overloads and the unit trips out if the condition persists.

Write today to address below for your FREE copy of illustrated booklet B-4249, "Transformers That Cut Distribution Costs", which explains in detail the advantages of CSP Transformers.

Type Class-A Transformer ... cutaway view showing arrester, breaker and tap changer handle.

YOU CAN BE **SURE** ...IF IT'S

Westinghouse

WESTINGHOUSE ELECTRIC INTERNATIONAL COMPANY

40 Wall Street, New York 5, U. S. A.

THESE WORK SAVERS KNOW NO SEASON

From spring cultivating to winter snow clearance—Bolens tractors in six popular models are work savers in every season.

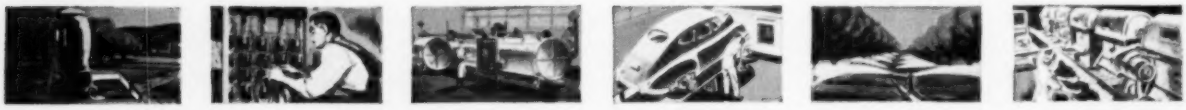
Trade Mark

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

In this modern day and age, *harnessed power* does many year 'round jobs *faster and easier*—around homes, gardens, factories and farms. With no more effort than taking a stroll or a drive, you can now walk or ride while performing countless chores with versatile *Bolens Garden Tractors* and handy work-saving attachments. Pioneered by FMC's *Bolens Products Division*—Bolens tractors are compact, flexible, mobile power units for dozens of otherwise toilsome jobs. This is but another example of FMC's many contributions to better farming, gardening and maintenance work.

FOOD MACHINERY AND CHEMICAL
CORPORATION
EXECUTIVE OFFICES: SAN JOSE 6, CALIFORNIA, U.S.A.

PEERLESS PUMPS | OHIO-APEX PLASTICIZERS | FMC CANNING MACHINERY | JOHN BEAN AUTO. SERVICE EQUIP. | FMC PORTABLE IRRIGATION SYSTEMS | FMC CITRUS PROCESSING EQUIP.



REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD